NATIONAL CAR BUILDER

VOLUME XIII.
NUMBER 12.

DEVOTED TO THE INTERESTS OF RAILWAY ROLLING STOCK.

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DECEMBER, 1882.

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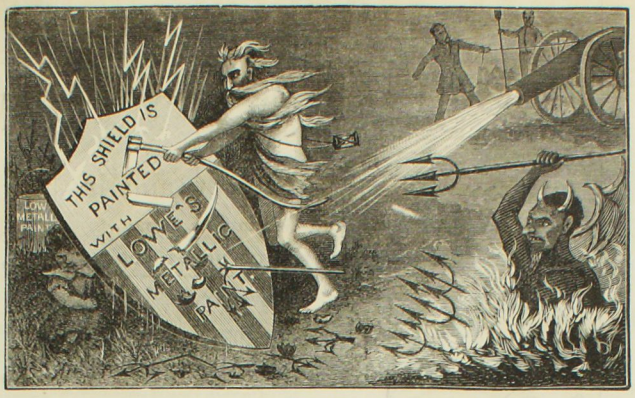

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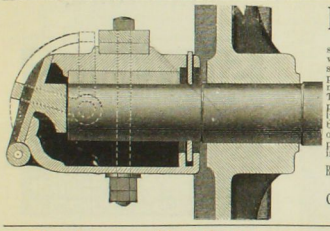

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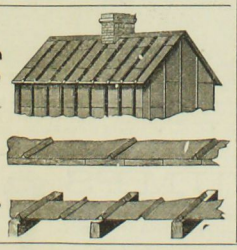

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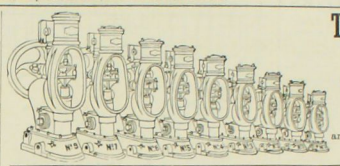

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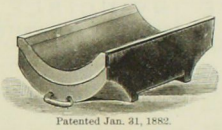

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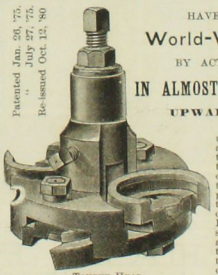

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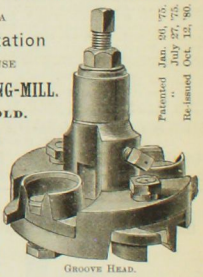

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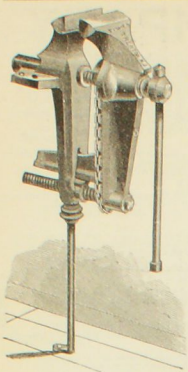

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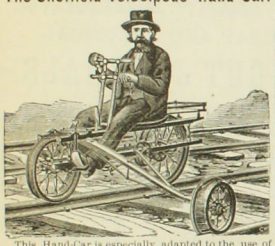

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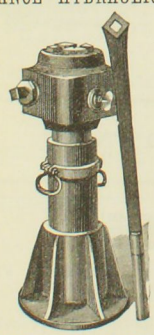

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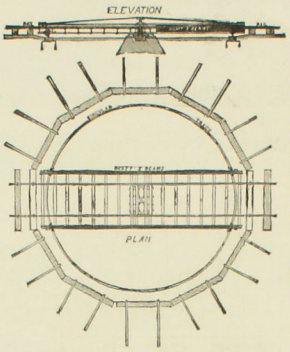

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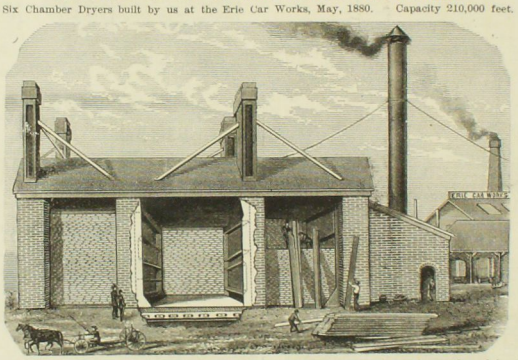

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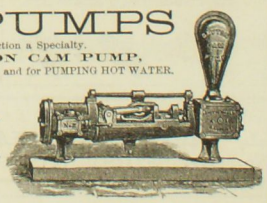

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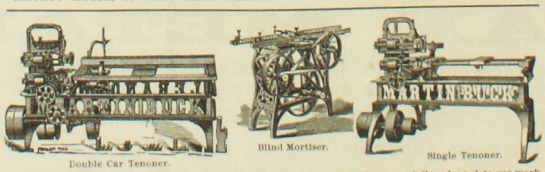

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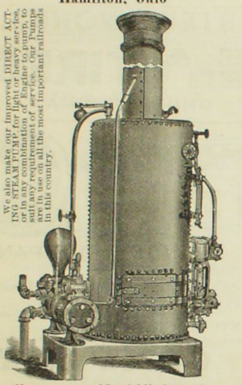

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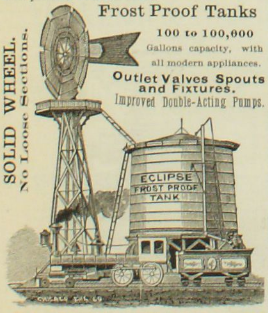

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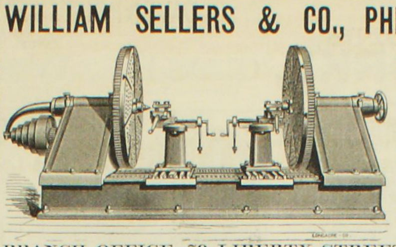

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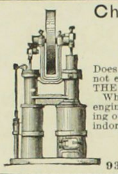

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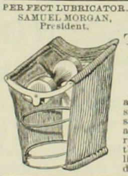

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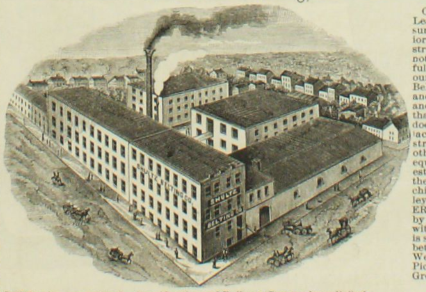
MANUFACTURERS OF

Shultz Patent Fulled Leather Belting, Lace and Picker Leather.



OUR Belting is made of Leather tanned on the surfaces only; the interior (which is the fibre and strength of the hide) is not tanned, but Rawhide fulled and softened by our patent process. Our Belting is more pliable, and hugs the pulley better and transmits more power than any other belt. It does not pull out at the lace holes or rivets. It stretches less than any other belt. It works equally well for the largest Driving Belts or for the fastest running machinery and smallest pulleys. Our LACE LEATHER is made of Rawhide, by our patent process, without any tanning, and is stronger, and will wear better than any other. We also make the best Picker Leather and Belt Grease in the country.

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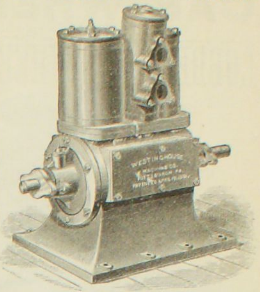

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One Man
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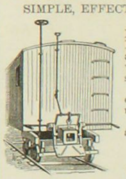

Requires no change of Draw Heads or Links and Pins, except that pin being attached to coupler prevents it being lost or stolen.

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ENGINE, COACH AND CAR OIL.

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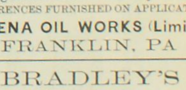

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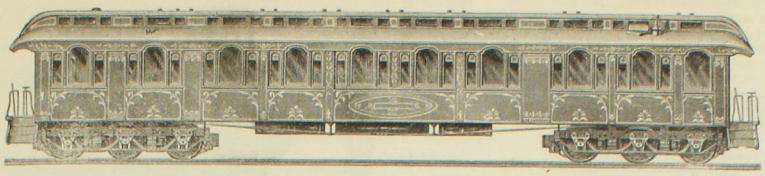
INDEX TO ADVERTISEMENTS IN THE National Car-Builder.

THE NATIONAL CAR-BUILDER.



DEVOTED TO THE INTERESTS OF RAILWAY ROLLING STOCK.

VOLUME XIII
NUMBER 12.

DECEMBER, 1882.

SINGLE NUMBERS, TEN CENTS.
$1.00 PER ANNUM.

Miscellaneous Items.

DURING the past year, the Peninsula Car Works, at Adrian, Mich., have built about 2,000 cars.

THE Pullman Car Co., at Pullman, Ill., are building 40 passenger cars for the Northern Pacific road.

THE Portland Locomotive Works, at Portland, Me., are building 40 locomotives for the Northern Pacific road.

THE Congdon Brake Shoe Co., of Chicago, are steadily increasing their production of brake shoes.

THE painting of the iron structure and stations of the elevated railroads of New York city uses up 100 tons of paint.

THE Cincinnati, Hamilton & Dayton shops, at Cincinnati, are building four 8-wheel engines of the road's standard pattern, which is similar to the Boon engine.

THE Southern Car Works, at Knoxville, Tenn., turn out $400,000 worth of railroad cars, and $175,000 worth of wheels every year.

THE Paige Wrought Metal Car Wheel Co., Springfield, Mass., have their wheels on 27 roads, and have orders in hand for over 400 wheels.

ADDITIONAL machinery is being placed in the Chicago, Splice Bar Mill, and the capacity of the mill will be increased to 1,000 tons of finished bars per month for 1883.

THE Texas & Pacific machine shops at Marshall, Texas, contain a working force of about 600 men—the largest, it is said, of any similar institution in the South. The monthly disbursements amount to nearly $60,000.

MR. F. DE FUNIAK, General Manager of the Louisville & Nashville road, has resigned his position, and will give his attention to the completion of the Pensacola & Atlantic road, of which he is President.

THE Louisville & Nashville shops, at Louisville, Ky., are building a standard 8-wheel engine, and rebuilding 2 moguls; 100 box cars will be built during the present month.

THE Jeffersonville, Madison & Indianapolis road is building two passenger cars. They are 45 ft. 9 in. long, cost $4,200 each, and are painted to conform to the Pennsylvania standard.

THE Car Works of Blain Brothers, at Huntingdon, Pa., caught fire on the evening of Nov. 15, and the main erecting shop and paint shop were destroyed, with about 40 freight cars.

THE *Railroad Gazette* says that during the six months ending with June 30 of this year, there were 138 patents granted in the United States Patent Office for car couplers.

THE English wrought-iron steel-tired wheels, with solid wrought-iron hub and spoke centers, and tires secured by Mansell's patent fastenings, are in use on 22 railroads in the United States and Canada.

THE contemplated new freight and passenger station of the Michigan Central road, at Detroit, including sheds and annexes, will be of brick with brown stone trimmings. The estimated cost of the whole is $175,000.

MR. ROBERT KING has resigned the position of Master Mechanic of the Western Railroad of Alabama, a position he has held for many years, and will go into the machine business with the Palmetto Iron Works, at Columbia, S. C.

THE Ohio Falls Car Co. has built a 30-ton box car for testing. It weighs 28,300 pounds, and has 4 × 8 in. journals. The trucks are similar to the "Cleveland" pattern, in which the form of truss is weak. Otherwise the car appears to be well designed.

THE Cincinnati, New Orleans & Texas Pacific company contemplate building new shops that will cost $250,000, exclusive of ground and machinery. The engine equipment is soon to be increased by the addition of 10 passenger locomotives with 18×24 cylinders.

THE Litchfield, Ill., Car & Machine Company has begun the erection of an addition to their machine shops of 30 by 60 feet, to be used for storage purposes and a setting-up shop. The present setting-up shop will be occupied by new machinery.

THE Pennsylvania Railroad, it is said, will build new car shops at Fort Wayne, Ind., that will equal, if not surpass, those at Altoona, and have a capacity sufficient for building all the cars used on the Pennsylvania system of roads.

THE Pennsylvania Railroad Co. have given orders to the Grant Locomotive Works for 40 locomotives, and to the Pittsburg Locomotive and Car Works for 15. Orders have also been issued for 6,000 freight cars for the lines east and west of Pittsburg.

THE John Stephenson Company are building twenty-four street cars for shipment to Australia. They also export street cars largely to England and the different European countries except Spain, Italy, Switzerland and Turkey. They have supplied them to fifteen cities of Mexico, besides making frequent shipments to Central America and Brazil.

THE Central Pacific has a 12-wheeled locomotive of which A. J. Stevens, General Master Mechanic of that road, writes: The engine is at work on a grade of 116 feet per mile with 10 degree curves, one right after the other, as closely as they can be laid. The engine has hauled up this grade, 25 miles in length, a train of 14 freight cars loaded with 20 tons (of 2,000 pounds) to the car.

AT the Cincinnati, shops of the Cincinnati, Indianapolis & St. Louis road, two very handsome chair cars have just been completed from designs of Mr. J. S. Patterson, who has charge of the machinery and car departments. The cars are 55 feet long inside and cost $8,000 each. The shops have also just turned out 12 new caboose cars. The company intend building new shops, to be located either at Cincinnati or Indianapolis.

THE Bass Foundry & Machine Works, at Fort Wayne, Ind., employ 700 men and use 150 tons of iron a day. They have a new machine shop, 300x75, two stories, and manufacture steam engines, boilers, railway castings, etc. They make a specialty of a balanced cylinder valve engine, and have out patterns for a new automatic cut-off. The company are introducing Turner's patent feed water heater.

THE Chicago & Grand Trunk Railway has just added to its equipment ten large and powerful passenger engines. They are supplied with the extended smoke-arch, and are said to be perfect smoke-consumers, no smoke whatever being emitted from the funnel, and thereby doing away with the unpleasantness experienced by travelers on account of smoke and cinders. The fire box is of unusually large size, and is fitted with brick arches and baffle plates. The engines are of the following diameter: Cylinders, 18x24; driving wheels, 6 feet; cylinders' leading truck wheels, 37 inches of wrought iron with steel tires; length of engine over all, 61 feet 1½ inches; height from top rail to top of smoke-stack, 15 feet 7 inches; weight on drivers, 66,000 pounds; total weight of engine, 102,000 pounds. The capacity of the tender is over 3,000 gallons, so that engines run very long distances without having to stop for water.—*Railway Register.*

THIS is an age of practical thinkers. The reverence and respect which men once entertained for the traditions and customs of bygone generations are banished from modern thought. The thinker of to-day is skeptical, logical and unimaginative. He believes in nothing that is not capable of a practical demonstration, and rejects with scorn the superstitions and traditions of the past. As a poet or a religious martyr he would cut a sorry figure, lacking sufficient imagination for the former, and the requisite faith and devotion for the latter. Nevertheless he is a strong character and will leave his mark in history. He has dragged electricity from a hidden realm and hitched it to his car called "Progress;" he has made the steam of the tea kettle a motor of such consequence as to astonish even himself; by means of a string he talks across states and empires; from the coarse metals of the earth he makes the most useful and ornamental things; and finally he has made the world what it never was before—a world of thought.—*Age of Steel.*

AT the St. Louis shops of the Missouri Pacific road one baggage and two passenger cars are in course of construction. The company will soon order 20 new mogul engines with 20 x 22 cylinders, to be delivered at the rate of two engines per month. These shops have in use a portable drilling machine driven by a 3-cylinder brotherhood engine supplied with air from two Westinghouse pumps. These engines are quite small, are mounted on wheels and are also used for driving stay-bolt taps, portable cylinder-boring machine and valve-facing machine. They were designed by Mr. Hewitt, the superintendent of machinery, aided by his assistant, Mr. Leroy Bartlett. Inasmuch as they can be taken to any place in the shop and applied to almost any kind of work, taking the place of hand work in many cases, it is a little surprising that such machines are not more generally used. Mr. Bartlett has also designed, for shop use, an attachment to common calipers whereby the thousandth of an inch can be accurately measured, which makes it extremely serviceable in fitting crank-pins and driving axles. He has also devised an attachment to nut-tapping machines which doubles their capacity; an attachment for a lathe to back off and give clearance to taps; a system for turning taper bolts to size without calipering hole; a device for testing steam gauges by a weighted lever without a standard gauge, and many other improvements for facilitating shop work.

Mr. Hewitt has made a wrought iron brake-shoe which lasts six times as long as cast iron shoes and costs but a few cents more. The blind tires on his consolidation engines are tapered with the large side out, as on curves these wheels are in the line of a chord, which brings the large diameter of one wheel on the outer rail and the small diameter of the opposite wheel on the inside rail. He also dispenses with the fitting of engine-truck brasses, placing them in the truck jaw which is not slotted for their reception, claiming there is no more need of fitting them to the axle than in the case of a freight-car truck, and that the good results have justified the claim. The wear of driving wheel flanges on mogul engines he has prevented by shortening the radius bar of the truck by placing the center pin of the bar or frame under the center of the cylinders instead of back of them as is usally the case. In the piston rod and valve stem stuffing-boxes he uses split rings of lead with the best results. On an engine with hemp packing in one cylinder, the rod was reduced by wear and truing $\frac{3}{16}$ of an inch in 2½ years, while on the opposite side, with lead rings, the reduction was only $\frac{1}{16}$ of an inch during the same period. The rods packed with lead are certainly tight and very smooth, and free from scoring. The plan has been patented. We expect in due time to illustrate several of the devices above mentioned.

A School Car for Locomotive Engineers.

The Buffalo *Express* says:

"Standing on a side track at the Central depot was a car looking very much like an ordinary baggage-car. It arrived in Buffalo recently, having come directly through from New York. It is a school car, designed to instruct the locomotive engineers of the New York Central & Hudson River Railroad in the principle and operation of the Westinghouse air-brake. It was built at the West Albany car-shops, under the direction of Mr. A. H. Catlin, who has charge of it. It is fitted up with all the piping and appliances that would be used in connection with the air-brakes on a train of 25 cars. Mr. Catlin has caused these appliances to be so arranged that he can at any time disconnect one section from another and give practical demonstrations of how the brakes will work. There are three gauges at one end of the machinery; one similar to that which every locomotive carries, to indicate the air pressure on the train; another to show the air pressure in each auxilary reservoir under the cars and a third to show the pressure on the brake piston when the brake is applied. 'There are a score of important points that we can make clear to the engineers by means of this apparatus,' said Mr. Catlin, 'which they would not be likely to learn in the mere running of their trains. Here every thing connected with the brake is presented to view, and I can teach an engineer more about the practical workings of the brake here in one hour than he would be likely to learn in six months on the road.' 'Is it true, Mr. Catlin,' said the reporter, 'as is said, that not more than one engineer in five understands the working of the air-

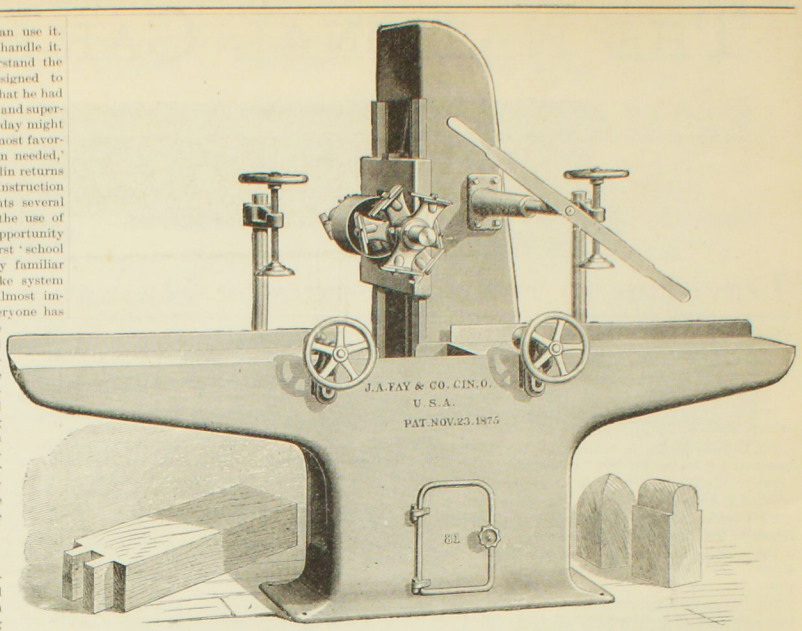
brake?' 'All who use it,' was the reply, 'can use it. That is, they know how it works and how to handle it. But a great many who can use it do not understand the principles of its operation, and this car is designed to teach them just that.' Mr. Catlin further said that he had hastened to Buffalo in order that the car builders and superintendents of motive power in session here yesterday might inspect the car. These gentlemen give only the most favorable opinion of it. 'It is just what has long been needed,' said Mr. Lentz, of the Lehigh Valley. Mr. Catlin returns at once to New York, but will soon make an instruction trip over the road, stopping at the principal points several days, and thoroughly drilling the engineers in the use of the brake. On his return to Buffalo ample opportunity will be given to all who desire to inspect this first 'school car.' It is claimed that an engineer thoroughly familiar with the principle and operation of the air-brake system can locate a defect or hitch in the machinery almost immediately. Anyone who has traveled—and everyone has—can recall sudden stops and delays 'because the air-brakes wouldn't work.' The train which was run into, smashed, and burned up at Spuyten Duyvil last winter involving such a terrible loss of human life, had been stopped in consequence of some trouble with the air-brakes, and had it not been for the long delay in finding out what the trouble was, there would have been no collision. An official order is soon to be issued by the New York Central & Hudson River Company, requiring all eng neers in their employ to pass an examination and procure a certificate that they thoroughly understand the use of the automatic air-brake."

It is reported that recent experiments in Philadelphia have proved that it is possible to propel street cars smoothly and rapidly by the expansion of powerful steel springs, the difficulty of giving a uniform and perfect temper to the metal having been overcome. The company controlling the patents makes the following claims: The motor consists of six springs coiled upon a cylinder. Each spring will be made of a flat bar of steel 300 feet long, 6 inches wide, and one-fourth inch thick. These springs are tempered by the new process so uniformly and delicately that their power becomes tremendous. After first being coiled so that their diameter is 18 feet, they are tempered, and then wound up until the diameter is 7½ feet. In this condition they are placed upon the motor truck and the appliance of the patents adjusted.

The Confidence Game in Railroad Enterprises.

The circulation of false news to bolster up the credit of new railroad enterprises is an industry which some people have practiced with great assiduity of late years. Three or four persons with very little money and no credit start a new railroad enterprise. They have a survey made, and take care that every smallest step be heralded throughout the country. Apparently the various press associations and special correspondents in the country accept and forward any news of the kind if those who furnish it will pay for telegraphing, on the theory that editors will use their discretion in publishing what is sent them; but as the editors must often depend upon their agents on the spot to judge of the importance and especially of the accuracy of the news sent them, they are likely to publish what is sent them as important news. In this way the newspapers sometimes become, as it were, the decoys in a great confidence game. The railroad projectors in search of capital or credit, and not able to obtain either on the merits of their enterprise as presented to capitalists, use every exertion to spread the opinion that their road is wanted badly by some corporation or interest that can pay well for it. It is telegraphed all over the country that Vanderbilt wants it and Gould wants it, to-day that this one is likely to secure it, and to-morrow that the other is making a better offer; and after a month or two of this lavish use of the telegraph, the name of the enterprise becomes familiar in the public mind, and many come to regard a preliminary survey and a few miles of grading as an established company, to which it will be safe to sell rails and rolling stock and perhaps to lend money.

And this use of the telegraph to magnify the importance of a company is not confined to new companies. Some companies with roads in operation (whose managers usually have a load of stock or bonds to sell) somehow manage to have the most trifling facts that may tell in its favor published far and wide, together with various rumors as to the great things it is going to do, the importance of a new connection likely to be negotiated, or of a new line which it contemplates building. And in most cases these roads and projects concerning which so much "news" is published in the newspapers are among the most worthless in the country. When we find telegrams week after week announcing that Gould and Vanderbilt are contending for the possession of some unbuilt line in Illinois or Iowa, we may safely infer that some one is very anxious to sell the line, and that if he does not sell he will have great difficulty in getting money to build his road.—*Railroad Gazette.*



PATENT VERTICAL CAR TENONING MACHINE.

This machine is designed for the cutting of tenons on car sills without reversing the timber. It successfully performs the operation of cutting single, double or triple tenons on both ends of long timber from one face without turning the stick end for end, by passing the stick by the machine, cutting the tenons on one end as the head passes downward on the other end as it is carried upward. The machine is very heavy and substantial, will stand on any floor, and requires no braces or supports. It has two iron tables in fixed positions, having a gap between them, for the passage of the heads below the surface, arranged at a convenient height for handling the timbers, with adjustable fence for the thickness of the shoulder on the face side of the timber, screws for holding down, and gauges to determine the length of tenons. The heads are made of steel and traversed vertically, on a column, by means of a hand lever, the frame carrying the head being so counterbalanced as to take from the operator all the weight, either in ascending or descending. The countershaft is placed vertically over the machine, leaving the floor clear of all obstructions, the belt remaining at the same tension in whatever position the head is working. The machine may be used for cornering, beveling, smoothing, rabbeting or cutting down on the sides of timber, by fixing the head and passing the timber as in a planing machine, and the ends can be rounded or molded as well as cutting all styles of tenons upon them. The T and pulleys are 12 × 8 , and should make 700 revolutions. Manufactured by J. A. Fay & Co., Cincinnati, O.

Varnishing Passenger Car Bodies.

At the recent meeting of the Master Car Painters' Association, the following remarks were made by Mr. A. P. Sweet, of the Detroit, Lansing & Northern road, as to the benefit of putting two or three coats of varnish on a car body within 24 or 36 hours of each other in place of giving each coat the proper time to dry:

I am aware there is great difference of opinion on this subject, and I am anxious to have these opinions advanced. Personally, I am acquainted only with one car shop where the repeating process has been adopted and where it is systematically carried out. I am informed by the master painter that he has practiced it for two or three years, and is well pleased with the results obtained. He has no trouble with the varnish, cracking or any other eccentricities, and has no hesitation in saying that it far ahead of the old system.

I had an opportunity ot seeing some of his work while visiting his shop, and I found it equal in finish and better in body than work executed in the usual way. Some of his cars have been run for 20 months before revarnishing was found to be necessary, and after that length of time they presented as good and as solid a surface as could possibly be desired—finishing up as good as new. His varnish coats were applied with an interval between them of 24 to 48 hours, according to the weather, as soon as the previous coat was sufficiently set.

I have not adopted the repeating process in my own shops, but approach very closely to it, usually applying my last coat of wearing varnish on the third day from applying the first, and the results have been eminently satisfactory both in finish and durability. I was at first somewhat doub ful of the propriety of this mode of procedure, but I tried it, and am satisfied with the results.

I prefer the three days plan for the following reasons:

1. A better opportunity is given to remove any small particles from the surface of the first coat which may by accident have been deposited there, while in the 24 hours' plan it is impossible to remove them without washing off an entire panel, the previous coat being too soft to be manipulated in any other way.

2. In three days a car is sufficiently haired off to destroy the gloss, thereby removing many small particles of dust and also enabling the varnishers to better observe the progress of their work, and there is then no danger of rubbing up or loosening the previous coat by too free use of the brush, while in the 24 hours' plan it is quite the reverse—it being a very difficult operation to perform unless by practical and skillful workmen, and even then there is great danger of loosening the previous coat and causing a rough and unsightly job.

Some of the benefits of following one coat of varnish with another in quick succession are these:

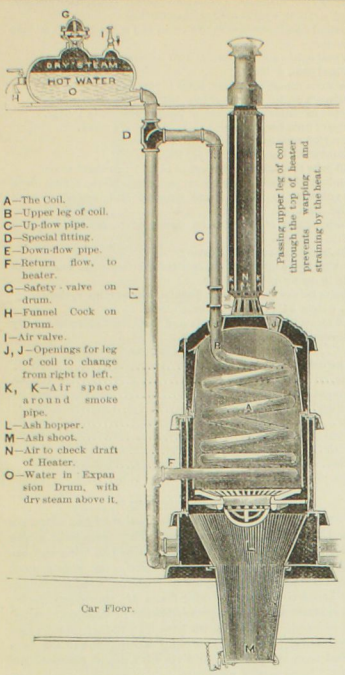
1. The impossibility of applying a light second coat over a surface already possessing a strong biting tack, a heavy following coat must necessarily follow, demanding the appliance of at least an extra quart of varnish to a car; more than ordinarily would be used were the first coat dry and hard. The extra quantity of varnish applied will of course give a surface better calculated to stand the ordinary wear to which a car is subjected, and will clean up better and revarnish in a more satisfactory manner when the time comes that makes this necessary.

2. The time usually given to the first coat to dry is, I think, to a great extent, just so much time thrown away, or if used at all should be given to the drying of the finishing coats as a whole after all are applied. This I am convinced is the place where the time should be given and not between the coats.

I think it is absolutely necessary, to insure more durability, that the varnish coats should be thoroughly hard before putting a car into service, and the great secret of the premature decay of the varnish, in my opinion, is caused by this rushing a car into service simply because it happens to to be finished and standing idle in the shop or shed. I hope the time will come when our superintendents and master mechanics will realize the necessity of a little patience in this matter, and be willing to allow sufficient time for hardening the varnish thoroughly coats before putting cars newly varnished into commission. I find the repeating process is being practiced to a great extent in England by some of the best carriage painters, and in the course of conversation with one of them while on a visit to this country, I learned that their best work is being done in that way. They call it "varnishing on the tack." I remember when attending our convention at Cleveland, in 1878, a remark made by one of our members to this effect and I believe in these words, "varnish will penetrate through all under coats, even if they have been applied six months apart." And I believe this to be true, and if so, why wait so long between coats and waste so much time? Why not, as before remarked, give the time to the hardening of the varnish coats as a whole? We never find varnish coats separating and peeling off, flaking off as color coats do, which to my mind is strong evidence of the penetrating power of the varnish, and proving that the several coats have become blended and united in one common whole, and they so remain, and when they perish they perish as a whole and not coat by coat.

In conclusion, I will simply say I do not see why the repeating process may not be made a success, and although I do not, properly speaking, use it in my own shop, I approach it so closely that if any harm resulted from using varnish in quickly succeeding coats, I should long ago have found it out.

It is said that a train from New York, *via* the New York, New Haven & Hartford road, reached Boston a few days ago two years behind time. The reason was, it was just that much behind time in starting.



SEARLES' RAILWAY CAR HEATER.

To devise a heating apparatus for railway passenger cars that will meet all the essential requirements of safety, economy of fuel, easy management, a uniformity of heat, simplicity and durability of construction, moderate first cost and expense of maintenance and repairs, has hitherto been a difficult problem in railway operation. The plan which we illustrate belongs to the class of hot water heaters, of which many have already been tried, and some of them with considerable success. The Searle Heater, however, is an improvement upon its predecessors in many respects, as will be evident from a careful examination of its construction and operation, as well as from its satisfactory performance wherever it has been subjected to a practical trial.

The principal defect in the water heaters heretofore used is the difficulty of maintaining a uniform temperature in consequence of an interrupted circulation of the water caused by ashes accumulating about the coil inside the heater, or by ashes or clinkers in the grate which can only be removed by dumping and building a new fire. At other times the safety-valve opens when the fire becomes too hot, and the salt water is blown out of the coil as well as expansion drum. To prevent this overheating and its consequent effects, it has been necessary for an attendant to regulate the heaters heretofore used. In the one we illustrate, a very simple device obviates the difficulty and renders a pressure-gauge unnecessary, by compelling the hot water to *turn* through the special fitting D inside the car, instead of passing through the drum on the outside. All pressure is removed from the drum, and the water circulates round a 60-foot car in 40 minutes, instead of an hour and a half to two hours, and with slight loss of heat, causing a more even temperature in every part of the car—the expansion drum serving only as an equalizer. There being no pressure in the drum, the safety-valve can not open nor any water escape from the coil.

The escape of gas into the car is prevented by a circular register round the stovepipe collar, which permits a large quantity of cold air to pass up the pipe through small openings. This, while creating an inward draft to check the fire, prevents an outward escape of gas in the car. The ashes from the heater are discharged through the car floor at *M* at the end of each trip, making no dust in the car nor requiring the use of a shovel. The circular cup-grate below the fire can not be burned out. When revolved by the shaker-handle it cuts the clinker from the centre of fire without wasting the unburnt fuel round the outer portion of large grate. After the clinkers are removed the large grate may be rotated and a clean, bright fire secured without dust or dirt in the car. The coil pipe is 1¼ inches in diameter and 19 feet long, thereby securing a larger flow of water and more rapid circulation than if the pipe was shorter and smaller, as in some other heaters. The coil, being suspended above the grate, no ashes can accumulate behind it to check the draft.

A cut-off valve (not shown in the engraving), located between the heater and special fitting *D*, enables the attendant to maintain any degree of temperature by decreasing the flow of hot water through the pipes around the car, and with no increase of pressure in the pipes or drum, as would take place in other heaters. With these means for regulating the heat, there is no necessity for opening doors or windows to cool the car, the deck ventilators and the necessary opening of doors at stations affording the means of ventilation by letting out the bad and letting in the fresh air. By dispensing with the coil and pipes, the heater can be used as a common stove for hard or soft coal.

Some New Street Cars.

The John Stephenson Co., of New York, are filling an order for 20 street cars for the Central Railway of Baltimore, Md., a new road of which W. D. Crane of that city is in charge of the construction. The cars that are now being built for it by the above-named company are of the usual size, but in the details of their construction and finish they embody many improvements that are worthy of notice. Indeed, it would be difficult to devise anything more complete for promoting the comfort and safety of street car travel, or more tasteful and elegant in their interior and exterior decorations than these cars as they appear at the shops of the builders in readiness for shipment.

The substructure is of white oak, and the superstructure of white oak and ash. There are seven windows of double thick plate glass on a side, and the sashes and blinds have springs attached to them which prevent rattling. The end windows are protected by fine wire cloth, and the doors have drop sashes. The roof has the usual pivot sashes for ventilation, and in addition to these there is a ceiling of perforated wood along the center of the roof, through which the air passes into a chamber or space between the perforated ceiling and the roof proper, and escapes without creating a current. The curved part of the roof on each side is beautifully finished in panels of imitation inlay work, each panel being of a different design. In the center of ceiling is a large lamp with corrugated reflectors of silvered glass. The lamps at the ends of the car are also provided with the same kind of reflectors, and are arranged so the lights can not be blown out by the wind, nor is there any danger of oil-drip. The seats are upholstered in crimson plush, and the usual cords run along over the heads of passengers, with pendants attached for stopping the car.

The platforms are depressed 3 inches below the level of the car floor, which brings the steps that much nearer the ground. The steps have rubber treads. The mountings of the platform and hand rails are in solid bronze. Under each platform, and projecting a little forward of the draw-heads, is a curved iron rod called a "horse-guard," to protect the horse, in case he should fall, from the iron work of the platform. There is also a "life-guard" attached to the pedestals, consisting of a leaf spring with a piece of flexible fire-hose, which is held in position directly before the wheel and over the rail. This serves to push people who may fall on the track away from the wheel and save them from being run over. The pedestals are the Stephenson pattern, and are so designed that six rubber springs are distributed in each in such a way as to prevent any metallic contact between the car body and the running gear, and at the same time secure a universal motion to the car body which obviates all pounding or jarring. The draw-heads have a 2-inch rubber spring to make the starting easy, and the pole is self-supporting, so the necks of the horses are relieved of its weight. The wheels are Baltimore open-plate, and combine strength with lightness. A powerful brake is provided with a double or duplicate chain. The name of the road is painted conspicuously on a maroon ground on the sides of the cars. The Stephenson Co. are to build more for the same road as soon as those now in hand are completed.

Better Mechanical Devices Needed.

Annual reports of railroad companies for the most part are showing increased operating expenses and lower rates. Labor is more costly, and as the volume of traffic becomes larger, there must be found some cheaper method of handling it or soon there will not be sufficient margin in it to enable the companies to pay fixed charges. What is imperatively demanded is to discover some new way of loading and unloading freight by improved machinery, so that fewer men can do the work and do it cheaper. We must have a change in present methods or otherwise the companies will soon be doing business at a loss. If the fertile minds of inventors could only discover contrivances to supply these wants their fortunes would be made. At every station along a railroad, but more especially at the terminal points, there ought to be something more than the old-fashioned cranes and derricks, so that heavy articles could be more easily and expeditiously unloaded and loaded. It seems as though something could be invented which would do the work required. In England there are derricks at every station which are great improvements over American brute force, and in that country it is said that a trainload of freight is disposed of in half the time required in America. There is no reason why we should not have everything the British roads have, and we ought to improve upon their tools and machinery. It seems as though our freight cars could be so constructed that they could be loaded and unloaded more easily. Too much time is certainly lost in filling them under the present system. The invention most needed however is a freight-car coupler which will do for freight what the Miller platform has done for passenger trains. The loss of life, because of the dangerous practice of coupling cars now in vogue, is simply enormous, and something ought to be done to prevent it. American inventors are well paid for their work, and it is certain that if any one would invent either a new style of freight car, or a practicable coupler, or a machine for handling freight, or a fuel-saving apparatus for locomotives, or any other such contrivance, he would reap a fortune. We all can recall the names of those who in a fortunate moment hit upon some labor-saving invention, or improved part of machinery, which made them rich men. There is no more inviting field for American genius than this, and it ought to be well worked. Railroad managers are anxious to find something which has genuine merit, and if any article such as we have named was discovered and proved feasible and useful, it would be adopted immediately on all the roads in the country. We must have these improvements, and we believe that in time we will have them.—*Railway Register.*

Straight Tread Car Wheels.

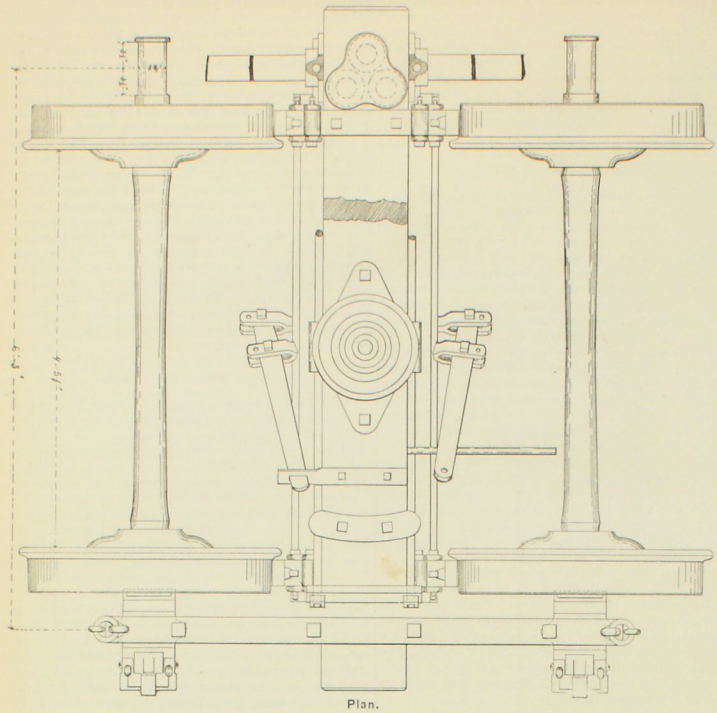
The Griffin Car Wheel Company, of Detroit, Mich., have been for the past three months turning out 150 wheels per day, of all kinds and diameters, with straight or coneless tread, on orders from railway companies, so that their economy and practicability is in a fair way to be tested. All the wheels of these patterns are cast so as to measure when cast the full size by which they are designated; that is, a 33-inch wheel measures exactly 33 inches in diameter on the tread line. It is a fact not generally known, that most 33-inch wheels are so only in name, ranging from 32 inches upwards in diameter; other sizes in the same proportion. All of these new pattern wheels are made especially heavy, with a view to meeting the increased demand for strength consequent on the heavy loading of freight cars. The outside inch of the edge of the tread is beveled or coned off ¼ inch in the chill, so as to prevent the chipping off of the tread when passing over frogs, etc. This has been partially done heretofore on some makers' wheels in rounding off the corner of the tread, also in casting the outer edge of the tread in sand. The latter idea, however, is objectionable from the fact that the sand is liable to allow lumps and swells to form in the very place where it is most necessary to avoid them. In the coneless wheels referred to, the chill in which the wheels are cast is turned out so as to produce the bevel on the outer edge of the tread, in the chill, thus presenting a smooth, even finish, and absolutely preventing anything in the shape of a swelling or lump on the tread. The total output of the Griffin Car Wheel Company, and the Griffin & Wells Foundry Company, of Chicago, is 450 wheels daily, the greater part of which is being disposed of to railway companies for their monthly requirements. They are increasing this output, as it is not sufficient to keep pace with their orders.

Tires of Mixed Metals.

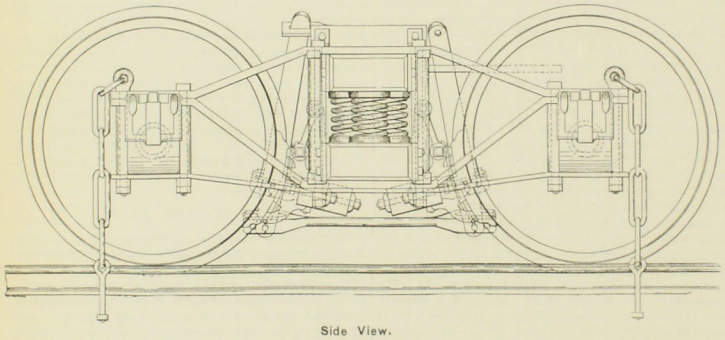
The Chamouni Works have recently begun to manufacture tires of mixed metal—half iron and half steel—and which, it is claimed, will have the hardness of the latter without its fragility. The body of the tire is composed of a ring made of pieces of puddled steel, and inserted between two hoops of fine iron, which form the outer sides of the section. The whole is welded together by the hammer. The principles of their manufacture are as follows, but they have not been developed very far as yet: A bar of fine iron, which is to serve as the core, is first rolled, and then a hoop of fine iron if put on at each end cold. One of these hoops is afterwards to form the flange, and is composed of three coils of equal size. The other is formed of a single coil, and is to make the outer face of the tire. Wedges of puddled steel are then placed obliquely in the space between the two hoops, thus making so many spirals inclined on the axis of the tire. The arrangement brings the wedges together when the hammer is applied, and thus a complete welding is obtained. The wedgers are cut from rolled bars; they should be of hard steel, but yet soft enough to weld easily with fine iron. The round pieces thus obtained are forged and welded with the hammer. Four heats are requisite to obtain a ring like those used in the ordinary processes. The welding is completed by the rolling, and it brings the inside core to such a small thickness that it disappears altogether in the boring.—*Engineering* (*London.*)

GENERAL MASTER MECHANIC PRESCOTT, of the Vandalia Line, has commenced the rebuilding of the passenger engines on the road, 22 in number. No. 140 came out of the shops at Indianapolis recently, and is now said to be one of the finest passenger engines on Indianapolis lines. A handsome straight stack has been substituted for the "Peddle" old fogy stock; the engine has an extension boiler, spark arrester, brakes on the driving wheels, and a dozen other modern improvements. Every passenger engine on the road is to be rebuilt and equipped with driving wheel brakes.

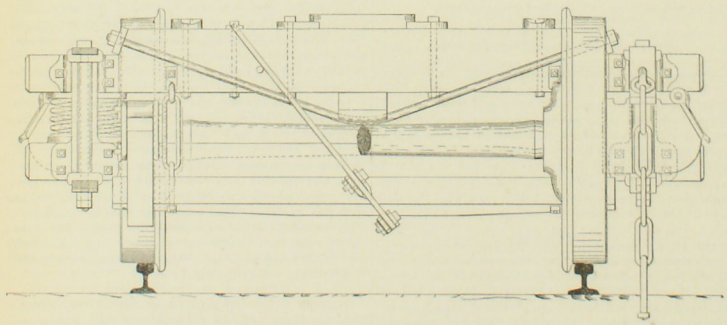
STANDARD FREIGHT CAR TRUCK—NEW YORK, ONTARIO & WESTERN RAILROAD.



Plan.



Side View.



Section and End View.

TRUCK IRONS AND TIMBERS.

2 bolsters.....wh. oak 8½ × 11½″ × 7′ 7″ 5 × 10½″ at ends.
2 spring planks. " 5 × 11½″ × 7′ 7″.
2 brake beams.. " 4 × 7″ × 5′ 8″ 4 × 4″ at ends.
2 bolster truss blocks " 2½ × 6½″ × 1′ 3″.
Arch-bars, top and bottom, 1 × 3½″; pedestal tie-bars, ⅝ × 3¼″.

CONSTRUCTION.

To be the Diamond Truck, N. Y., O. & W. R. Railway standard pattern.

Axles to be of the best hammered iron, with 3⅜″ × 7″ journals.

Center to center of journal, 6′ 3″; total length over all, 6′ 11¾″.

Axles, box, brass and wedges to be M. C. B. standard pattern.

Wheels 33″ diameter, double plate, broad tread, best quality, bored straight, weight not less than 540 lbs.

Pressed on axle not less than 25 tons and not more than 40 tons pressure.

Wheel gauge not less than 4′ 5¼″ between flanges.

Wheel base, 4′ 10″.

Between center of column, bolts 1′ 1½″.

Between center of journal box, bolts 8″.

Between center of column and journal box, bolts 1′ 6¼″.

Rise of arch bars "upper," 5¾″, of 3½″ × 1″ iron.

Inverted arch bars, 11″ of 3¼″ × 1″ iron.

Pedestal tie bars of 3½″ × ⅝″ iron.

All bolts through side of truck to be of 1″ wrought iron.

All bolts through truck bolster and guide block, spring plank and guide bar to be ⅝″ round wrought iron, and all to have double nuts.

Each corner of truck to be connected to car by ⅝″ safety chains.

Oil boxes to have spring covers.

Brakes to be attached to one truck between the wheels, and hung to spring plank.

Truck bolster springs to be Ludlum three-group springs, 6¼″ rise, weight 51½ lbs., two to each truck.

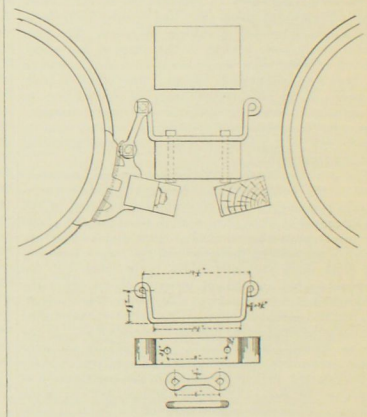
All screw threads, bolt heads and nuts must conform exactly to Master Car-Builders' standard.

MATERIAL IN TRUCKS.

White oak	266 ft.
Bolts	190 lbs.
Wrought iron	930 "
Castings	1,254 "
Nuts	65 "
Brasses	80 "
Wheels	8 "
Axles	4 "
Check chains	48 "

THE Chicago, Milwaukee & St. Paul road has added six new dining cars to its equipment. They were built by the Harlan & Hollingsworth, Co., Wilmington, Del., and are said to be the finest cars of their class ever constructed. The inside finish is in mahogany, with rosewood trimmings and hardwood ceilings. The floors are alternated cherry and walnut, and the seats upholstered in maroon leather, and pivoted. The windows have 34×42-inch plate glass. The kitchen, pantry and dining arrangements are very complete in every detail, and vie with those of a first-class hotel. It is hardly necessary to say that the cars have 6-wheel trucks (Allen paper 42-inch), air-brakes, &c.

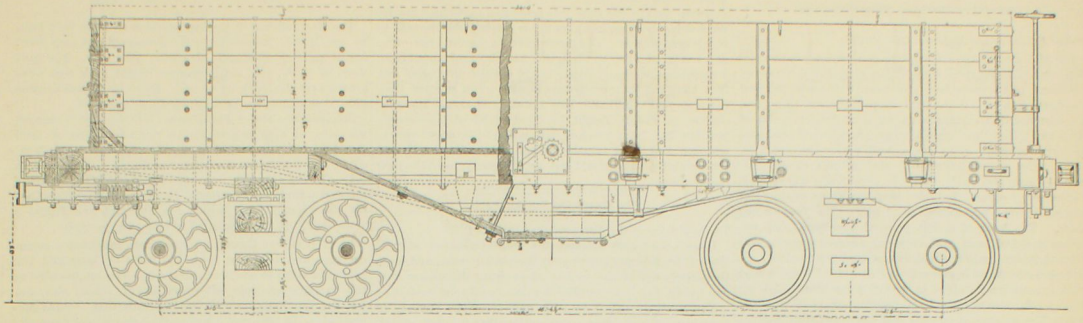
OF the last hours of Engineer Crulman, who died at Syracuse, N. Y., recently, a local paper contains the following: As the end approached he became delirious, and in imagination he again made his regular trips from Syracuse



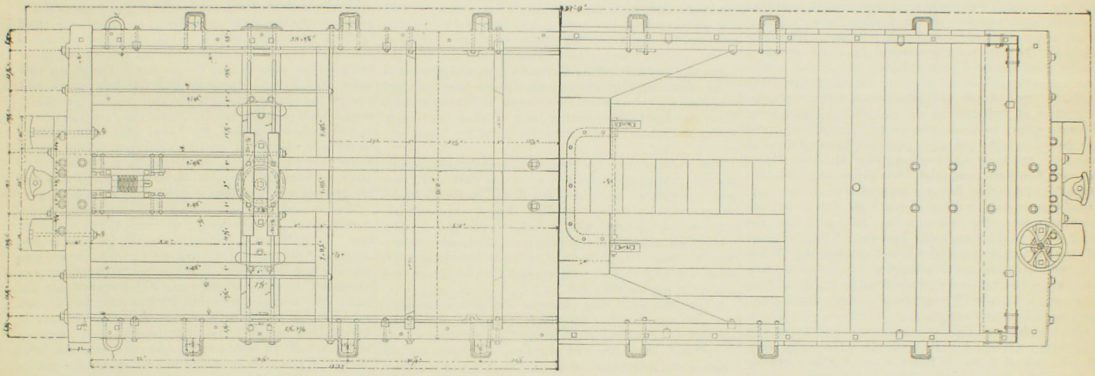
to Buffalo. He described the appearance of the country, and at Rochester noted that he was a minute or two ahead of schedule time. Near Buffalo, at the crossing of the Buffalo, New York & Philadelphia road, he started suddenly and exclaimed: "They signal danger!" and reached out his hand with an effort to put on the air brakes. He seemed to accomplish this and bring his train to a stop. "It is all right now, the train is safe and the trip is over," he said, and, turning upon his side, breathed his last.

THE principal shops of the Cincinnati, New Orleans & Texas Pacific road, are at Ludlow, Ky. Since the present general master mechanic, Mr. James Meehan, has been in charge, they have been fitted up with many new tools, including a large steam hammer, under which the frames of several new engines are being forged. The long experience of Mr. Meehan in railway mechanical departments enables him to select, with unerring judgment, the most valuable improvements in the way of machine tools from the mass of good, bad and indifferent with which the market abounds. In this respect he has attained a high rank in his department, and is ably seconded by Mr. James Tomlinson, M. E., who has charge of the designing and draughting, and from whose drawings the illustrations of the extended smoke and brick arch, on another page, have been engraved.

STANDARD GONDOLA HOPPER-BOTTOM FREIGHT CAR—NEW YORK, ONTARIO & WESTERN RAILROAD.

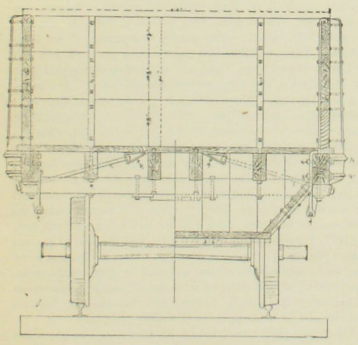


Side Elevation and Section.



Floor Frame.

Floor.



Transverse Section.

GENERAL DIMENSIONS.

Length over sills	25′ 8″
Width over sills	8′ 0″
Center of bolster to outside of end sills	5′ 1″
Door opening of hopper	4′ 7″ × 2′ 6¾″
Center to center of bolsters	15′ 6″
Height, top of floor to top of side plank	3′ 4″
Length inside of end plank	23′ 6⅛″
Width inside of side plank	7′ 6⅛″

BODY TIMBERS—FINISHED SIZES.

2 outside sills	yel. pine.	5¼″ × 9½″ × 24′ 7″
4 intermediate sills	"	4″ × 8½″ × 6′ 1″
2 center sills	wh. oak.	4″ × 8¼″ × 24′ 7′
2 end sills	"	8″ × 9½″ × 8′ 3″
2 body bolsters	"	5″ × 12″ × 8′ 1″
2 cross pieces	"	4″ × 8¾″ × 7′ 0″
4 side planks	yel. pine.	2¾″ × 14⅝″ × 24′ 0″
2 " "	"	2¾″ × 11″ × 24′ 0″
4 end planks	"	2¾″ × 14⅝″ × 7′ 6¼″
2 " "	"	2¾″ × 11¾″ × 7′ 6¼″
2 buffer timbers	wh. oak.	4″ × 9¾″ × 3′ 6″
4 draw timbers	wh. oak.	4″ × 7″ × 5′ 1″
12 stakes	"	3⅝″ × 4¾″ × 4′ 3″
8 keys in sides	"	2⅝″ × 3″ × 0′ 8″
2 blocks between draw timbers	"	8¾″ × 9″ × 1′ 6″
2 body bolster truss blocks	"	8″ × 9″ × 1′ 0″
2 doors of hopper	"	2″ × 15″ × 5′ 0″
2 sides of hopper	"	1¾″ × 12″ × 8′ 8″
2 " " "	"	1¾″ × 12″ × 5′ 10″
2 ends in body	"	1¾″ × 12″ × 7′ 6⅛″
2 planks on side sills	"	1¾″ × 6¾″ × 11′ 7″

Flooring (wh. oak) 1¾″ thick, 6″ to 8″ wide, 8′ 3″ long.

Hopper ends (wh. oak) 1¾″ thick, 10″ to 12″ wide, 5′ 8″ long.

[End sills tapered at ends to 7″ × 9⅝″. Stakes tapered at top to 3⅝″ × 3⅞″.]

CONSTRUCTION.

Side and intermediate sills framed to end sills by double tenons, secured to end sill and cross-pieces, and cross-pieces secured to center and side sills by ⅝″ rods.

Body bolster housed out to receive sills and secured by ⅝″ bolts; bolster trussed by 1″ rods, with ⅝″ × 3½″ center bearing straps.

Hopper supported by 3″ × 1″ wrought-iron straps, with ends turned outward 2″, resting on side sills.

Side plank secured to frame by eight ¾″ bolts and four ⅞″ strap bolts each side.

Ends secured to frame by two ⅞″ strap bolts each end, and to sides with angle plates of ¼″ × 6″ and ¼″ × 3″ wrought iron, four inside and four outside.

Angle plates, stakes and strap bolts secured to side plank with ⅝″ carriage bolts the required length.

Sides protected from wear by ¾″ × 2½″ iron, extending full length on top of sides.

Doors of hopper fitted with wrought-iron hinges of ⅝″ × 2½″ iron, connected by ⅝″ and ½″ chains to wrought-iron winding shaft of 1¾″ diameter.

Buffer timbers fastened to end sills by two ⅞″ bolts and two ⅝″ rods through body bolster, end sill and buffer timbers.

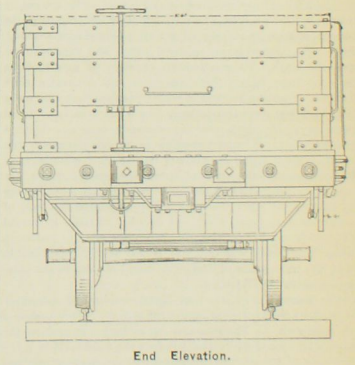
Body truss rods, two in number, of 1½″ round iron, with 1¾″ upset ends, located immediately inside of side sill, resting on cast-iron saddles on top of body bolsters and on saddle castings under side sill.

Rods to be bent warm to a templet, and made to fit in their place.

Body bolster capped across ends with ⅝″ × 3½″ wrought-iron plates, bent over at the end, forming a lip on the side.

Draw-head and dead blocks of cast iron, N. Y., O. & W. Railway standard pattern.

Draw-bar springs to be 5½″ diameter, 6″ rise, with ultimate capacity of 18,000 lbs.



End Elevation.

MATERIAL IN CAR BODY.

Yellow pine	986
White oak	1,302 "
Bolts	419 lbs.
Rods	478 "
Wrought iron	1,488 "
Castings	1,451 "
Nuts	116 "

HERE is a nice little problem for amateur mathematicians: Two trains of cars, 150 and 140 yards long respectively, pass each other, the 150-yard train going at the rate of 50 miles per hour, and the 140-yard train going at the rate of 40 miles per hour. How long does it take them to pass each other, each going at the rate of speed named?

A Boston tramp carries about him a box of dead cockroaches. When he feels hungry he goes to a restaurant and orders a good dinner, nearly finishes it, puts a cockroach in the principal dish, and calling the waiter, points with horror to the object. Instead of being charged for dinner, he stands a chance of being paid to keep silent.

Communications.

Locomotive Machine Shop Foremen.

To the Editor of the National Car-Builder:

The idea seems to prevail among many master mechanics that when a foreman is wanted for the shops, some old vise hand, or the big-wheel lathe man, will make the best one, because he has been in the shops for some time, and it is assumed that inasmuch as he is a first-class vise or lathe hand, that these qualifications are sufficient, and that the best workman, so to speak, will make the best foreman. The writer has studied the subject closely for several years, and finds that his experience agrees with that of many others, that the best workman makes the poorest foreman nine times out of ten. The reasons are plain. The doing of a fine piece of vise work, and the management of men and material are two separate and distinct things, and require different qualities of mind. A first-class vise hand is generally a "one idea" man, whose work is more nearly allied to that of a machine. To become a good vise or lathe hand requires years of application. The pay rarely exceeds $3 a day, and this necessitates close economy in living. In the old hand, this habitual economy becomes second nature, and when he is advanced to the position of foreman, he carries it into the shop management where it is often out of place. I have seen a foreman of this type repair a set of gauge-cocks that were entirely worn out, when the cost of repairing the old ones equaled the cost of a new set, and after being repaired would not last more than half as long. The same foreman repaired a channel bar tender frame that had been in a collision, the cost of repairing it exceeding the value of a new frame. Nothing that could be repaired was allowed to reach the scrap heap. His habits of living would not permit it. This type of foreman clings to his antiquated lathes, when it would put dollars into the company's pocket to be rid of them at any price, and fit up with modern tools. His shop seldom has any first-class machinists, because poorer ones will work for $2.25 a day. Another fault with the "best workman" foreman is to insist on a new hand doing work the foreman's way. This new hand may be a good one, and he is pretty sure to have a different way of doing things. He has learned his way and it is part of his trade. When the foreman insists on his changing his mode, the new hand's pride is hurt—a dangerous thing to do. He neglects his work, hoping it will come out a poor job, that he may be revenged on the foreman.

The best foreman the writer ever knew was a man who had never served a day at the trade. He was a time-keeper, and put in his odd hours in assisting the draughtsman, making tracings, etc. After he had been employed by the company several years he was appointed foreman—for just what reasons I do not know. He was a man of good horse-sense, and never made the mistake of attempting to instruct a man under him. When he gave a man a job, he allowed him to do it his own way. If too much time was used on it he knew it—his time-keeping came to his aid, and his knowledge of drawing helped him wonderfully. He visited large railroad shops and studied how they did work. He studied the capacity of new tools as he saw them, urged their adoption, and generally with success. If an engine was to be overhauled, he had a gang boss look her over and inform him what was considered necessary. He then used his common sense and decided the question. He was a gentleman in every sense of the word, a good judge of human nature, and when a man under him needed a word of encouragement he got it. He was generous and kind, but never compromised his dignity by familiarity with the men. He calculated the cost of repairing a piece of work and decided whether it would pay. If it would not, the piece was consigned to the scrap heap. The result was that the period of his foremanship was the most efficient and economical of any in the shop management of the road.

The reason for this is that Nature seldom or never bestows two eminent gifts on the same man. This is shown in many ways. The inventor of a device is seldom the man who puts it successfully before the public. Howe, the inventor of the sewing machine, had inventive talent and was a fine workman, but others had to furnish the business talent to make the machine a financial success. Watt, the inventor of the condensing engine, was a useless mechanic until Boulton undertook the management of him. A first class watchmaker endowed with the finest mechanical skill, is quite likely to fail when he puts a $200 stock of jewelry in his shop for sale. A foreman, then, needs the capacity of the successful merchant, the ability to manage and direct others, although the specific operations he may himself be incompetent to perform.

Three or four years in a railroad shop can hardly fail to fit an intelligent young man of good habits for the position of foreman, if he has the requisite managing capacity. He will, during this time, have become familiar with engine repair work, which is simply a changeless repetition, the essential elements of which can be learned as well in four years as in twenty. But when a man has worked twenty years at a vise or lathe, he is utterly unfitted for a foreman's duties, for the reason that he cannot after that period get out of the ruts he has become habituated to. I have in my mind a boy, who, after working six months at the trade, was transferred by the master mechanic to the counting room and the drawing room as an assistant, and after several years service in this capacity, was made a foreman, and in due time was promoted to division master mechanic, and now has men in his employ old enough to be his grandfather. Old locomotive engineers, too, who never worked a day at the trade, have been advanced from a round-house engine dispatcher to master mechanic, and they have run their departments with more success than if a ten-year vise-hand had them in charge. Many instances of failure might be cited in which a foreman's position has been reached late in life by those whose experience had been on the earlier and smaller roads, and consequently they could not satisfactorily meet the new requirements. X.

The Extended Smoke-Arch.

To the Editor of the National Car-Builder:

I have read with interest the communication of "V-Hook" on this subject in your November issue, and hope the article will be the means of exciting discussion that can hardly fail to be profitable to many of your readers.

The Arch described by your correspondent appears to have been of such poor construction that it is not surprising he should have formed an unfavorable opinion of it. It is, of course, absurd to suppose that such a device would result in a saving of 50 per cent., although I think we may reasonably expect some saving, if sufficient attention is given to the matter of construction. It seems to me that we would obtain a freer draft than is possible with the ordinary cone and netting, and that instead of contracting, we might possibly enlarge the nozzles. I know of one engine, which, after making her first trip with the extension, had her nozzles increased $\frac{3}{16}$ in. and eventually $\frac{1}{4}$ in. Her steaming qualities were much improved, and although no accurate note was taken of fuel consumed, there was a perceptible saving; and with this one item in favor of economy, I will leave the point for future discussion.

The extension was, I believe, designed more for the purpose of preventing sparks than of saving fuel, and if properly constructed and cared for, it will be found to act admirably in the former capacity. I have frequently traveled on engines fitted with it, and except when hauling a fairly heavy load up a heavy grade, the sparks thrown were scarcely perceptible; and even when working hard, those that were thrown were so small that they were dead almost on leaving the stack.

It is on this point that I disagree with your correspondent. He says, "It is evident that sparks that would pass through 4 × 4 netting must be continuously thrown from the stack." Some few will, of course, be thrown, and the number will depend on the quality of fuel and condition of the netting, and although I admit that some may occasionally be thrown, it is by no means evident to me that they must be. The sparks retained in the extension will generally be found heaped up against the front end, and if the extension is of proper dimensions, and the spark trap carefully arranged, there will be no difficulty in removing cinders, nor will it be necessary to make stops of 15 minutes to clean out.

If the Extended Smoke-Arch only gives us cleaner trains, it is well worth consideration as well as the expenditure of some money and labor. J. G. T.

The Blow-Back Accident on the Pennsylvania Railroad.

To the Editor of the National Car-Builder:

I have noticed in the newspapers several attempts to explain the "blow-back" accident which occurred about a month ago on the New York Division of the Pennsylvania Railroad, near Jersey City. One writer of considerable prominence says that the nozzle of the blow-back had accidently got turned so as to send the draft back through the flues; but he evidently does not understand the application of the device. The blow-back was originally designed to convey the escaping steam from the safety-valve to the tank; but as this resulted in heating the water at times so that it was too hot for use, the conveying pipe was carried to the smoke-arch; but instead of the pipe pointing up the stack, as stated by the writer, so as to act as a blower and increase the generation of steam, it came down in front of the flues, and being full of holes on the *back* side, the escaping steam was intentionally blown back through the flues in order to check the draft, and with the result in that case as represented. SUTHERLAND.

THE GEORGIA CAR COMPANY, at Cartersville, Ga., having just sent the first shipment of cars to the new Memphis & Vicksburg Railroad, Master Car-Builder J. J. Casey writes to Mr. C. E. Lucas, superintendent of the car company, expressing the highest satisfaction with the cars and saying: "I tender you my sincere thanks for the very good condition in which they arrived here. I was afraid that something would be wrong, but I was happily disappointed. You can rest assured that anything I can do for you in my poor way will be done most cheerfully and with the full assurance that your work will bear me out." Mr. C. K. Madder, President of the Memphis & Vicksburg Railroad Company, endorses the above and says: "I desire to give you my thanks for your efficiency and faithfulness in accomplishing such desirable results."

Early English Railroads and Locomotives.

BY FRANK C. SMITH, M. E.

The first railroad in England appears to have been built by one Master Beaumont between his coal pits near Newcastle and the river side, about the year 1630. The rails were of wood, and large wagons loaded with coal were drawn over the track by horses. These tramways became more common as the coal mines were developed.

Solomon de Caus, a Frenchman, was the first to suggest the idea of applying steam to the movement of land carriages and propelling ships, and for this he was imprisoned in the Bicetre, in Paris, as a madman. This was in 1641. In the year 1760, a Frenchman named Cuguot made the first actual steam carriage. He afterwards built another for the French King, which run into and demolished a stone wall. It was discarded as being too powerful.

In 1772, Oliver Evans, an American, invented a steam carriage and obtained from the State of Maryland the exclusive right to use it on the roads. The engine used in this carriage was soon after used to run a flour mill, and was the first high pressure engine, built that worked successfully. In 1787, and again in 1794, Evans sent drawings and specifications of this engine as applied to steam carriages, to England. Richard Trevithick, an Englishman, had access to these drawings, and applied the principles of Evans' high pressure engine, as embodied in the drawings, to a steam carriage. In 1802, Trevithick patened the application of the non-condensing or high pressure engine to the moving of carriages on a railroad. In 1804, he built an engine with a cylindrical boiler having a double or curved flue containing the fire, the chimney being on the same end as the fire door. The steam cylinder was 8 in. in diameter and 4ft. 6 in. stroke, and was let into the top of the boiler and operated a working-beam which propelled the driving wheels, the plan of the engine being the same as the Evans plan. The exhaust steam was discharged into the chimney. This engine hauled ten tons of iron, together with the cars, at five miles an hour for a distance of nine miles; and this was the first railroad in existence operated by a locomotive.

Thus, although an Englishman built the first practical locomotive, the brains and drawings were supplied by an American. The lightness of the engine occasioned more or less slipping of the driving wheels, and a step backward was taken by Blenkinsop, who in 1811 patened the application of a rack-rail, the engin driving a gear which meshed into the rack. This inventor, however, originated the idea of two cylinders, his engine being otherwise similar to that of Trevithick's. In 1812, two Englishmen, the Chapman brothers, built an engine for a coal mine near the River Wear. It had a boiler similar to Trevithick's, the drivers being geared together. It weighed six tons, and pulled a load of 54 tons up a grade of 46 feet to the mile at four miles an hour.

In 1814, George Stephenson built an engine at Killingworth colliery. The boiler was cylindrical, 34 in. in diameter and 8 ft. long, with an internal flue 20 in. in diameter. There were two cylinders 8 in. in diameter and 2 ft. stroke. The whole was mounted on four wheels. This engine pulled 30 tons up a grade of 1 in 450 at four miles an hour. The boiler and engine resembled that of Chapman's, and had two upright cylinders. The gearing is shown in *a a a a a*, Fig. 1. These gears were succeeded by an endless chain. The locomotive remained for many years as Stephenson had left it in 1814. He improved it in detail somewhat by substituting side-rods for the endless chain, and also steel springs, the engine appearing as in Fig. 2. The valve gear used by Stephenson is shown in Fig. 2 *a*, and consists of a loose eccentric driven by a crank or stop *a*. The reversing was accomplished by shifting the eccentric from end to end of a curved slot. In 1827, Timothy Hackworth contracted the end of the exhaust-pipe to increase the draught. This is claimed to be the first application of the exhaust to force combustion, the turning of the exhaust into the chimney by previous engineers being simply to get rid of it. He also applied the exhaust to heating the feed water.

Up to this time the speed of locomotives was ten miles an hour and under, owing to the want of heating surface necessary to generate sufficient steam for higher speeds. To the French nation is due the honor of making the present speeds possible. George Stephenson in 1828 and 1829, sent two of his engines to France for the Lyons & St. Etienne Railroad, of which M. Seguin was engineer. On trial, these engines would not exceed a mean speed of four miles an hour. M. Seguin at once saw that to increase the speed more steam was necessary, and that this required more heating surface. He applied the multi-tubular boiler as used at present, turning the exhaust into the stack, and as usual, England pirated the invention. The directors of the Liverpool & Manchester Railroad, of which Stephenson was engineer, offered a premium of £500 for the best engine, the directors having nearly decided to use stationary engines and pull the trains by means of ropes, in consequence of the slow speed of the then existing engines. The engines competing for the prize were the "Rocket," built by Robert Stephenson, a son of George Stephenson; the "Sanspariel," built by T. Hackworth; and the "Novelty," built by Braithwaite & Ericsson.

The "Rocket," shown in Fig. 3, had a cylindrical boiler, 6 ft. long and 3 ft. 4 in. in diameter, with 25 3-inch flues;

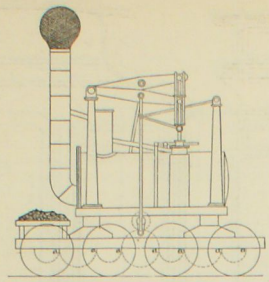


Fig. 1.

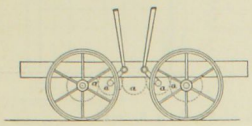


Fig. 2.

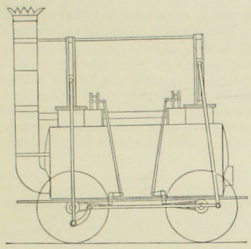


Fig. 3.

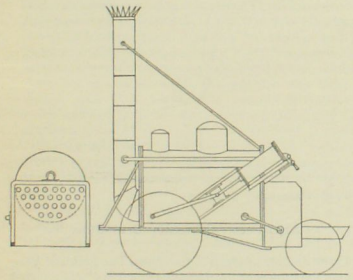


Fig. 4.

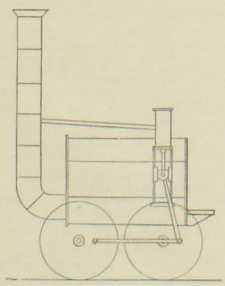


Fig. 5.

It is claimed in England that a Mr. Booth suggested the multi-tubular boiler to Stephenson; but this is doubtful, as Stephenson knew of the same improvement which M. Seguin had applied to his engines in France, and which had made them successful there. The fire-box was bolted to the end of the boiler, and was surrounded by water, as

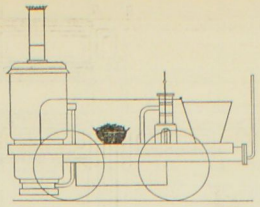


Fig. 6.

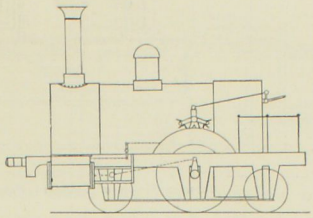


Fig. 7.

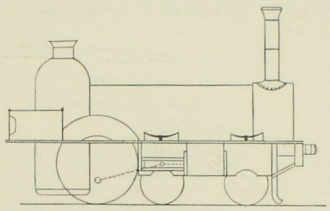


Fig. 8.

shown in the sectional view, the water space being connected to the boiler by pipes. The cylinders were inclined, and were $8 \times 16\frac{1}{2}$ in. The drivers were 4ft. $8\frac{1}{2}$ in. in diameter. The "Sanspareil," shown in Fig. 4, had a cylindrical boiler 6 ft. by 4 ft. 2 in. diameter. There was a single flue 24 inches diameter, with one bend. The two cylinders were 7×18 in., and placed vertically over the back drivers, which were coupled by a side-rod to the front drivers. The "Novelty," of which one of the builders was our own Ericsson, inventor of the ironclad "Monitor" of Hampton Roads fame, is shown in Fig. 5. The boiler was supplied with a flue which traversed the boiler three times. There was but one cylinder, 6×12 inches, driving a pair of $4\frac{1}{2}$ ft. wheels by means of bell-cranks. The exhaust was thrown into the atmosphere, the fire being urged by a pair of bellows.

The weights of the engines and their loads were as follows:

		Tons.	Cwt.	Qts.	Lbs.
Rocket:	Engine	4	5	0	0
	Tender	3	4	0	2
	Cars	9	10	3	26
	Total	17	0	0	0
Sanspariel:	Engine	4	15	2	0
	Tender	3	6	3	0
	Cars	10	19	3	0
	Total	19	2	0	0
Novelty: (no tender.)	Engine	0	16	0	14
	Cars	6	17	0	0
	Total	10	14	0	14

The conditions of the trial were, that each engine should consume its own smoke; if the engine weighed 6 tons it must pull 20 tons (including engine) at 10 miles per hour, with a steam pressure of 50 pounds per square inch—each engine not to exceed 6 tons in weight; the boilers to stand a test pressure of 150 lbs. per square inch, and the cost not to exceed £550.

The "Rocket" was the only engine that accomplished the required distance of 70 miles. Its greatest speed was 29 miles per hour, although in after years this engine made 4 miles in $4\frac{1}{2}$ minutes. At the trial the "Rocket" consumed of coke per mile, per ton of load, 0.91 pounds, and evaporated 18.24 cubic feet of water per hour. The "Sanspareil" ran $27\frac{1}{2}$ miles; greatest speed, 24.6; consumption of coke per mile per ton, 2.41 pounds, and evaporated 24 cubic feet of water per hour. The "Novelty," owing to an unfortunate series of accidents, failed several times during the trials, but made a speed of 15 miles per hour. At a later trial of this engine the consumption of coke per ton per mile was 0.36 pounds. The following table shows the performance of these engines:

Name of Engine.	Surfaces. Grate.	Fire-box.	Flues.	Total sectional area of flues.	Consumption. Water evaporated per lb. of coke.	Coke per ton per mile.	Average speed per hour.	Weights. Total load of train.	Engine and tender.
	Feet.	Feet.	Feet.	Inch.	Cu. feet.	Lbs.	Miles	Tons.	Tons.
Old Killingworth	7	11.5	82.75	340.	16.	18.34	0.98	6.	10.
Rocket	6.	20.	117.8	136.3	18.24	11.7	0.91	13.8	17. 7.45
Rocket (altered)	6	20.	117.8	134.3	20.6			13.3	17.45 7.45
Sanspareil	10.9	15.7	74.6	176.7	24.	28.8	2.41	14.	19.1 8.11
Novelty	1.8	9.5	33.	7.1				15.	10.7 3.85
Novelty (altered)	1.8	9.5	33.	7.1			0.36	8.	28.5 3.85
Novelty (improved)					47.8	4.7	1.1	9.	70.5
Killingworth	14.9	22.56	101.5	535.	40.	13.2	1.16	9.	50.5 10.5
Phœnix	6.	23.	206.	282.7	54.4	9.4	0.78	10.	41.5 7.
Arrow	6.	20.	283.	289.	44.	6.5	0.67	12.	35.5 7.

The "Phœnix" and "Arrow" were engines which Stephenson constructed immediately after the trial. The extravagant consumption of fuel by the "Sanspareil" was due to the excessively sharp exhaust which tore up the fire, throwing it in unburnt chunks from the stack. When put to a fair trial the "Novelty" proved the most economical, burning less than one-half of the fuel required by the "Rocket."

Progress from this time forward was rapid. The "Planet," built by Stephenson at this time, had inside cylinders, inclosed in the smoke-arch, a single pair of drivers, with a cranked axle forward of the fire-box and a smaller pair of leading wheels. She had 129 $1\frac{5}{8}$-in. flues in the boiler of 3 ft. by $6\frac{1}{2}$ ft. long. The cylinders were 11×16 in., and the drivers 5 ft. 3 in.; total weight, 9 tons, exclusive of tender. Stephenson also used in this engine the present style of locomotive boiler, the "Rocket" having a separate fire-box it will be remembered.

It was found that engines of the "Planet" class pitched badly at high speeds, and to remedy this a pair of trailing wheels were placed behind the fire-box. Outside cylinders came into fashion at this date (1834), and Fig. 7 shows Forrester's locomotive of this period. The valve gear was also arranged on the outside of the engine, and is shown enlarged in Fig. 8. In 1838 a Dr. Church, of Birmingham, built an engine with a pair of driving wheels 8 ft. in diameter under the forward part of the engine, with a pair of trailing wheels back of the fire-box. This engine is remarkable as being the first tank engine built. It frequently made from 12 to 15 miles in as many minutes. The cylinders were $11\frac{1}{2} \times 24$ in. In 1846 the English engine had assumed the form of Fig 8. The boiler was $13\frac{1}{2}$ ft. long between the smoke-arch and fire-box, and was $3\frac{1}{2}$ ft. in diameter; cylinders 15×24 in.; drivers 6 ft. in diameter.

The prevailing notion appears to be that Stephenson invented the first successful locomotive; but, on examination, he seems to have contributed only the side-rod and boiler as used at present. The locomotive, as he built it, was like a person without lungs or heart, and not until he adopted the Trevithick exhaust and Seguin's multi-tubular boiler was the engine of to-day a possibility. He was evidently a man of extraordinarily good judgment, but less inventive capacity, as his first engines were copies of their predecessors, and all of them incapable of making over 12 miles an hour, owing to insufficient heating surface. Knowing this to be the fault, it is certainly wonderful that he should have continued to use a single large flue, and to have allowed a comparatively inexperienced Frenchman to point out the simple expedient of increasing the heating surface by means of small flues. It would seem as if he must have had the most elementary mathematical education, or, if the contrary was true, that he would have been cognizant of this simple geometrical fact.

Diversity and Uniformity in Locomotive and Car Construction.

Mr. O. Chanute, Chief Engineer of the New York, Lake Erie & Western Railroad, in a paper read before the American Society of Civil Engineers', makes the following statements in regard to the diversity in the parts and details of cars and locomotives on that road, and the way in which the diversity has been lessened.

In 1874, there were upon the line of the Erie railway (now the New York, Lake Erie & Western) 469 locomotives. These comprised no less than 83 different types of engines, among which were scattered the following members of different styles of parts, which, being peculiarly exposed to breakage, required duplicates to be kept on hand:

70 different styles of cylinders; 14 of crank axles; 17 of smoke stacks; 41 of front end doors; 25 of driving wheel centres; 71 of driving wheel boxes; 50 of parallel rods; 42 of driving wheel springs; 32 of eccentrics; and 25 of links.

In cars, the same wild diversity prevailed. In 1874 there were 11,744 cars upon the road, comprising no less than 230 different varieties, among which were found the following:

27 different styles of draw-heads; 19 of journal bearings; 53 of oil boxes; and 52 of brake shoes.

Besides great divergencies in wheels, axles, trucks, framing and general design of bolts and nuts, and their screw-thread connections—the things of all others which it is important should be interchangeable—there was an endless variety.

In 1876, when the old 6-foot gauge was reduced to the standard of 4 – 8½, it was determined to make an attempt to reform the diversity, and the engines were first taken in hand. A consolidation engine was designed, and elaborate detailed drawings made to secure an absolute interchangeability of parts. Sixteen engines were built in accordance with the drawings and specifications, six of them at the road shops and the remainder by two locomotive building establishments. It was, however, subsequently found that the parts were not interchangeable, and it was then determined to furnish each contracting engine builder with a certain number of templets, in addition to drawings and specifications, for all engines put under contract, the original templets being kept in the company's own shop and duplicates furnished as wanted. There are 39 of these templets for a consolidation engine. Those with holes in them are provided with hardened steel bushings. The result has been that 108 engines of this class now on the road, are so exactly built that there is no difficulty in keeping duplicate parts on hand that are sure to fit in case of need. The same plan has been adopted with respect to passenger engines, of which about 20 of the new standard have already been placed on the road, and when the old broad-gauge engines are worn out, there will probably be but 8 types on the road for the different classes of service, instead of 83, as was the case in 1874.

The following table shows the cost of maintenance of locomotives on the road from 1870 to 1881 inclusive, the system having been inaugurated in 1876:

YEAR.	No. of Engines.	Mileage.	REPAIRS.	
			Cost.	Cost per 100 miles.
1870.....	440	9,326,379	$1,312,708.53	$14.07
1871.....	475	10,579,769	945,207.63	8.93
1872.....	488	12,318,504	1,000,050.04	8.11
1873.....	497	13,697,460	1,090,735.36	8.00
1874.....	469	13,123,701	1,064,892.73	8.11
1875.....	461	12,762,879	807,719.85	6.33
1876.....	468	12,612,365	890,381.03	7.05
1877.....	466	12,587,068	621,543.89	4.94
1878.....	475	12,716,583	646,714.97	5.09
1879.....	504	14,174,523	539,038.97	3.80
1880.....	528	14,295,876	582,158.20	4.07
1881.....	544	15,905,282	630,181.43	3.96

This includes the building of new engines every year to replace those worn out and condemned.

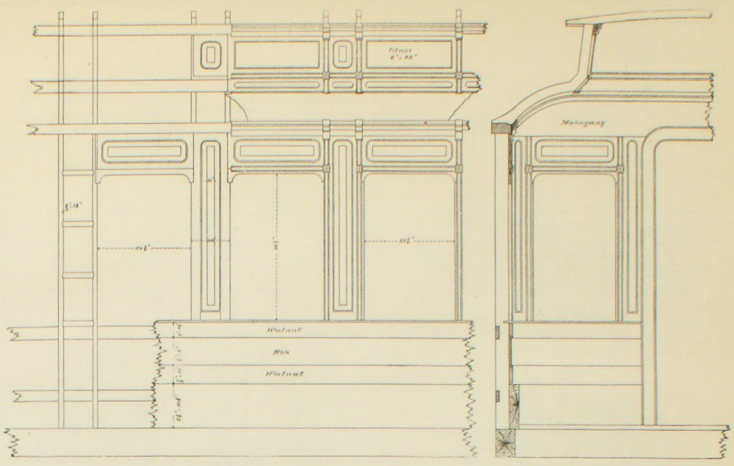
Much of the saving shown is doubtless due to other reforms introduced by the management of the road, as well as to the substitution of steel for iron rails, to the decrease of wages subsequent to the panic of 1873, and to the fact that many of the engines are new; but a considerable part is certainly due to the adoption of rigid standards, and of interchangeable parts, and moreover, a very considerable number of the old engines still remain, with all their imperfections, so that further benefits may be expected to result from the system, as it becomes extended in the future.

The same system has been adopted for cars; careful drawings and specifications have been made for a standard passenger car, a standard box freight car, a stock car, a platform car, and a coal gondola car, and all new equipment added is made rigidly to conform to these standards; while it is also applied to all cars rebuilt to take the place of those condemned, as well, so far as possible, to the old cars in the process of reducing their trucks to the standard gauge. This has wonderfully lessened the variety and amount of material which has to be kept on hand at the shops, to make good the wear and breakages, and very much expedited the performance while it lowered the cost of the work. The resulting economy in car repairs and maintenance is shown in the following table of cost for several years past.

Year.	Pass'ng'r and baggage cars.	Cost of repairs.	Cost per car.	Freight and coal cars.	Cost of repairs.	Cost per car.
1870..	345	$340,215.54	$986.13	8,840	$778,105.12	$88.02
1871..	356	287,935.91	808.78	9,779	944,181.72	96.55
1872..	378	273,023.15	722.28	10,638	846,193.02	79.55
1873..	375	274,082.45	730.89	10,473	906,020.96	87.34
1874..	344	211,768.34	615.60	10,775	920,532.82	85.43
1875..	358	250,967.91	701.02	11,274	861,447.18	76.41
1876..	407	383,341.91	941.85	11,537	852,274.25	75.17
1877..	401	153,691.49	383.04	11,598	755,877.39	64.25
1878..	407	139,043.51	341.63	11,656	624,229.39	53.56
1879..	396	145,421.76	357.23	17,567	639,491.54	36.40
1880..	411	182,965.54	445.17	20,831	678,170.05	32.55
1881..	410	258,771.70	633.59	23,309	797,033.45	34.19

This is subject to the same qualifications as to the causes of the economy, which have been mentioned as applying to the repairs of locomotives, and to the further consideration that the freight equipment having been very largely increased during the last three years (double, in fact,) the new cars are not yet sufficiently worn to require extensive repairs.

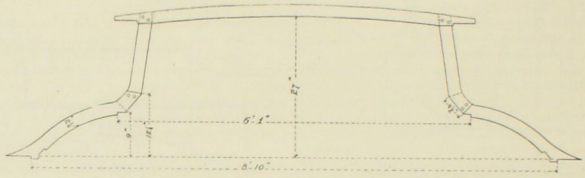
It will be noted that in freight car repairs the saving has amounted to about 60 per cent., while in passengers car repairs it is only about 40 per cent., chiefly in consequence, doubtless, of the much smaller proportion added. The average cost of car repairs for 5 years preceding 1875, was $771.42 per passenger car, and $87.19 per freight car. For the 5 years preceding the present year, it was $434.96 per passenger, and $40.92 per freight car; and these figures indicate an annual saving of about $136,000 for pas-enger, and $783,000 for freight equipment. Had the cost of 1871 prevailed in 1881, the expenses would have been $71,828 greater for passenger car maintenance, and $1,453,550 eater for that of the freight cars.



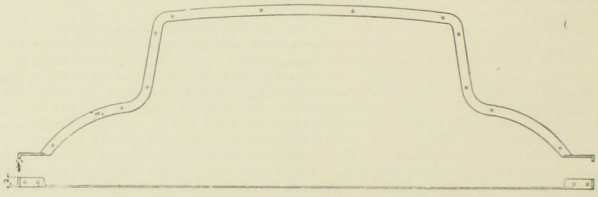
Interior Finish of Standard Passenger Coach of Fitchburg Railroad.

THE engraving illustrates the style of interior finish of the new passenger coaches of the Fitchburg Railroad, a general description of which was published in our September issue. The ground finish is in mahogany, relieved by recessed panels of ash burl, and raised panels of French walnut. The wainscoting is of walnut and ash.

DAY'S street railway track cleaners, manufactured at Detroit, Mich., are now in use on 70 street railways They are cheap, simple and effective, can be raised or lowered instantly by the car driver, and are entirely under his control. They are also adapted to all kinds of rails and all styles of cars.



Wood Carline of Fitchburg Railroad Passenger Coaches.



Iron Carline of Fitchburg Railroad Passenger Coaches

The engravings show the construction of wood and iron carlines as used in passenger train cars of the Fitchburg Railroad so clearly that no explanation is necessary, except to say that the iron carlins are only used at every other window, all of them being placed between two wooden carlines. It is proper to say that the construction shown is not altogether peculiar to this road, but is used with some slight modifications on a number of other roads.

Luminous Paint.

"Take oyster shells and clean them with warm water put them into the fire for half an hour; at the end of that time take them out and let them cool. When quite cool pound them fine, and take away any gray parts, as they are of no use. Put the powder in a crucible in alternate layers with flour or sulphur. Put on the lid and cement with sand made into a stiff paste with beer. When dry put over the fire and bake for an hour. Wait until quite cold before opening the lid. The product ought to be white. You must separate all gray parts, as they are not luminous. Make a sifter in the following manner: Take a pot, put a piece of very fine muslin very loosely across it, tie around with a string, put the powder into the top, and rake about until only the coarse powder remains; open the pot and you will find a very small powder. Mix into it a thin paint with gum water, as two thin applications are better than one thick one. This will give a paint that will remain luminous far into the night, provided it is exposed to the light during the day."

BETTER a man with paradoxes than a man with prejudices.

MOST people like to give in the sunlight and receive in the dark.

Report on Automatic Draw-Bars.

At the Niagara meeting of the Master Car-Builders' Association the subject of "Automatic Draw-Bars" was referred to the Executive Committee. The committee appointed to investigate that subject made the following report to the Executive Committee at its meeting held on Nov. 16:

NIAGARA FALLS, Oct. 12, 1882.

To the Executive Committee of the Master Car-Builders' Association:

GENTLEMEN: The committee on the subject of Automatic Draw-Bars beg leave to submit the following report:

We have given the subject careful attention, and unanimously agree that an automatic coupler would be desirable, providing one can be found to meet the requirements.

Of the many devices examined, we find several having special merit and would recommend for trial.

Under Class "A," S. B. Archer's, G. H. Ames', Perry's, Pugh & Browning's, and the Excelsior.

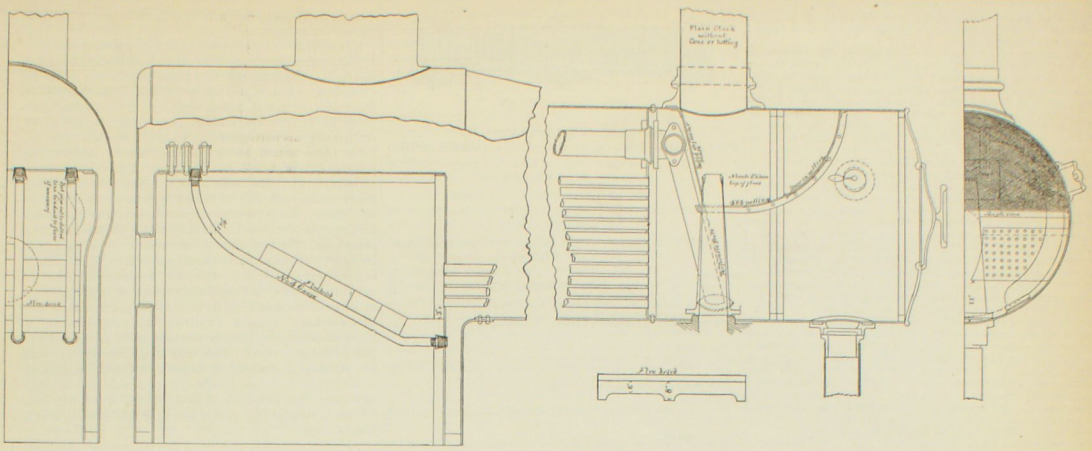
Under Class "B," the Janney, Hines', and Davis'.

As worthy of mention, we would name Safford's, Brook's, Hartwell's, Wilson's, Recht's, Cowell's, Dennis', Sadler's, Hargrave's and the Anchor.

In addition to those already named we examined the Wawakoneta, Everit's, Rhoad's, Leyden's, Merrihew's, Bunch's, Goldsmith's, Hickok's, Rodgers', Ken's, Cuddy's, Zehner's, A. W. Clark's, Colburn's, Beiber's, Taylor Bros.', Glover's, Teall's, Forbes', McCree's, Hohenstein's and Lentz's, which in our opinion are not practicable or applicable to freight cars.

JNO. S. LENTZ,
R. C. BLACKALL,
ROBERT MILLER,
C. E. GAREY,
GEO. HACKETT.
} Committee.

THE Missouri Car & Foundry Company, lately burned out, are building an iron machine shop 130 feet in length by 50 feet in breadth, a woodworking shop 75 feet in width by 200 feet in length, a boiler house, an engine house, etc. The company are now repairing some ten or twelve cars per day and turning out a number of new ones each week. They are working some 230 men and are constantly adding new machinery to their works.



EXTENSION SMOKE AND BRICK ARCH FOR LOCOMOTIVES.

Cincinnati, New Orleans & Texas Pacific Railroad—JAMES MEEHAN, *General Master Mechanic.*

There has been a great deal said about the extended smoke arch, as well as the brick arch, in the fire-box of locomotives. Many master mechanics who have used both insist that there is no economy in the brick arch, while others take altogether an opposite view. In the hands of Mr. James Meehan, the General Master Mechanic of the Cincinnati, New Orleans & Texas Pacific road, whose arrangement of these devices is shown in the engraving, there is no doubt as to their efficiency. The following statements show the cost of building them, and also the comparative economy in their use :

Cost of Extended Smoke Arch.

For material	$71 19
" labor	57 27
Total cost	$128 46

Cost of Brick Arch.

For material	$16 20
" labor	27 69
Total cost	$43 89

Engine without brick arch ran 1,896 miles, burning 1,670 bushels of coal, which is 70 pounds per mile. This high rate of consumption was owing to the fact that the passenger cars, of which there were from six to eight, had six-wheel trucks. There were also two express and baggage cars. The side tracks being short, passenger trains have to side-track for freight trains, and consequently use more coal on that account. The coal also was light and shaley, with little combustible matter, and burnt out much quicker than the coal used on Ohio and other northern roads.

Engine with brick arch ran 1,896 miles, burning 935 bushels of coal, or 39 pounds per mile, showing a comparative saving of 31 pounds per mile in favor of the brick arch.

The pipes for brick arch are of best charcoal iron, 1⅞ in. outside diameter, and of a thickness equal to No. 4 gauge, screwed at ends for wrought-iron thimble, and properly bent to curve. Thimbles or sleeves of wrought iron, internal screw to suit pipe screwed taper into crown and flue sheets, of dimensions shown in drawing ; bricks of good, hard material, length ½ in. less than width of fire-box, sections 8×4 in.; bricks nearest flue sheets to be beveled, and to have projections as shown, and the top edge of top brick to be about 3 in. below top of fire-door opening.

The extension piece to smoke arch to be as long as front ends will allow, made from common iron ⅜ in. thick and strongly riveted to existing smoke arch; to have hole, 11 in. in diameter, for cleaning out at bottom, and one on left side of engine in position shown in engraving, the whole to be perfectly air tight. The solid plate front of flue sheet extends downward at a convenient angle about ⅛ the diameter of arch, and secured to arch by 1¼ angle iron. Perforated plate is attached to bottom of solid plate neatly fitted round exhaust pipes, and to extend downwards to within about 11 in. of bottom of arch, to have perforations ⅜ diameter by 1½ in. pitch. Wire netting to commence at solid plate, top about 2 in. above center line of arch, and to be secured to arch by 1½ angle iron properly bent to curve and riveted in position, as shown, with door in front formed of netting for cleaning out—netting to be 3 or 4 meshes to 1 in. Top of exhaust nozzles to be 2 in. above line of top flue. Stack to be of wrought iron, with cast-iron molding at top and lagged with Russia iron.

In most cases the road is using much larger nozzles than formerly, and generally the steaming qualities of the engines seem to be improved. All the passenger engines of the Cincinnati, New Orleans & Texas Pacific are equipped as above, as well as those of the Alabama & Great Southern and the Vicksburg & Meridan roads, and the freight and switch engines soon will be.

Mr. Meehan took charge of the mechanical departments of the road a little more than a year ago, coming from the Alabama & Great Southern, and has brought the locomotive equipment, which was then the poorest, to a condition equal to any in the country, and which gives to the road something more than a mere local repute for first-class rolling stock.

Master Car-Builders' Association.

Continuation of Proceedings at Niagara Falls.

WHEEL GAUGES.

MR. BLACKALL reported that the committee on this subject had nothing new to present. The majority of the committee favored a gauge that allowed ⅜ of an inch play between flange and rail, and the minority ½ an inch play.

MR. L. GAREY urged the necessity of some standard that should fix a limit to be recognized and adhered to at points of interchange. It was no unusual thing to find the wheels on each axle of freight car-trucks set at different gauges, and even the wheels on the same axle were often set with a difference of from ⅛ to ¼ of an inch from the center of the journal.

MR. DAVENPORT alluded to the fact that the 4 ft. 9 in. gauge of the Pennsylvania Railroad would not admit of wheels set on with ½-inch play, and moved that the play allowed for 4-8½ gauge, be ⅜ inch, which would allow the wheels to pass the limit-gauge of this road.

MR. ADAMS was in favor of gauging wheels from between the flanges. The throat of the flange was a point that was too indefinite. The point of the wheel that struck the guard-rail in running, governed the position of the opposite wheel. He did not believe that all the roads in the country with 4-8½ track gauge should be forced to conform with the requirements of a small minority who chose to have a gauge different from the prevailing standard. He did not believe in that way of doing business. Furthermore, some cars of the Pennsylvania railroad had been examined in Boston, and although the wheels were supposed to have been put on according to a beautifully made steel gauge sent from Altoona, there were scarcely a pair of them that were found to be of the same gauge. He thought the best plan would be to have a universal standard templet by which all wheels should be made, and then the flanges could not vary except from shrinkage of the iron or difference in the molding sand.

MR. BLACKALL moved that wheels be gauged at 4 ft. 5¼ in. between the flanges.

MR. WILDER was of the opinion that they should be gauged from the outside instead of the inside of the flanges, and thus get the wheel makers to adhere to a standard size of flange in reference to the guard-rail and point of frog. A gauge of 4 ft. 7⅜ in. outside would avoid all danger in this respect. It was also a fact that wheels put on so as to fit tightly to the track gauge would tax the motive power very much more in passing curves than if more play was allowed.

MR. BLACKALL said there was a constant tendency of the track to spread at curves, and the more the wheels were driven together the more liable they were to drop inside the track.

MR. ADAMS said that the spreading of tracks at curves was largely due to the running of cars from a 4–9 track to a 4–8½ track. With a legitimate gauge, the track would stay in its place much better. The tendency of a track was always to spread.

MR. SMITH called attention to the following extract from the report of the committee made last June, the statements being based on information derived from civil engineers and others :

"On tangents tight gauge, or 4 ft. 8⅛ in. between rails; on curves from 1 to 7 degrees, ⅛ in. clearance, or 4 ft. 8⅜ in. between rails; on curves from 7 to 10 degrees, ¼ in., or 4 ft. 9 in between rails; on curves over and above 10 degrees, ¾ in., or 4 ft. 9⅛ in. between rails. The most common practice is to allow 1⅜ in. clearance in the guard of frogs and 1¾ in. clearance in the guard-rails opposite the point of the frog."

MR. C. E. GAREY favored Mr. Davenport's motion. It was practically impossible to fit wheels such as are now in use so as to leave 4 ft. 5½ in. between flanges and ⅜-in. play on the outside.

MR. FRY said he had investigated this matter a good deal, had got drawings and the opinions of superintendents, and if he were asked to-day how much play there was between flange and rail he could not answer the question. He did not know how the play between most of the wheels and rails, as they are now made, was to be measured. To say that it should be ⅜ of an inch conveyed no definite idea to his mind. The only possible way of arriving at a standard was to have the wheels and rails made as shown in drawings presented by the committee.

After some further discussion, the whole subject was referred back to the committee, to be reported upon at the next annual meeting. The committee consists of Messrs. Blackall, Hoit and Wall, the last-named gentleman having been appointed in place of Mr. Adams, who resigned.

CAST-IRON AND STEEL-TIRED WHEELS.

The following is an abstract of the discussion which took place after the report of the committee had been presented. The report was printed in our last issue :

MR. ADAMS said the committee had been appointed more particularly for the purpose of making comparisons between the two classes of wheels—steel-tired and cast-iron wheels. Iron wheels had been extensively used under the passenger cars of the Boston & Albany road. A careful account of mileage had been kept, and it was found that it fell very much short of the mileage of iron wheels reported by other roads, the average not exceeding 40,000 miles. He was satisfied that steel wheels were much the cheapest as compared with iron, and that they would average from 300,000 to 400,000 miles. Some of them that had run only 75,000 miles had been carefully examined without detecting any perceptible signs of wear, except a concavity of one-twelfth of an inch, perhaps, where the tread comes in contact with the rail. The circumference was very true, and there were no flat spots, and this he considered an indication that they would run from 400,000 to 500,000 miles before being worn out, and at least 200,000 miles without turning.

MR. CLOUD said that what he desired to get at was the relative cost and maintenance of the two classes of wheels; the matter of safety being a question which could only be settled by service and the conditions of climate, track, etc. Taking the cost of paper wheels at $80, and supposing they will make 500,000 miles, it is necessary to add the interest on the investment for the whole time the wheel is in service. This, he thought, would show that the total expenditure for the steel wheel would more than equal that of cast-iron wheels for the same length of time, and making the same aggregate mileage. From the data he had gathered of the service of wheels on the Pennsylvania Railroad and the other lines comprised in the system, he was of the opinion that steel wheels, with the present quality of steel tire, could not compete in the matter of cost with cast-iron wheels, until the same quality of steel wheels could be furnished at a lower price.

MR. FRY said that in comparing the cost of the two kinds of wheels, there were many things that iron wheels should be charged with that were apt to be overlooked. There was the delay to passenger cars while the wheels were being changed. In addition to the actual first cost of iron wheels, there was the necessity of keeping on hand a sufficient number of cars to take the place of those that were constantly laid by while the iron wheels were being renewed ; and of course the delay to trains and discomfort to passengers from the failure of wheels in service should be taken into account. Another thing that had been noticed on all roads was the very large number of iron wheels flattened by sliding. The introduction of the automatic brake seemed to have increased this cause of failure very largely. He would like to know whether steel wheels were affected in the same way. It would seem at first sight that a steel tire would suffer as much from sliding as a chilled iron tread, and if so, it was a very important matter. The steel wheels were far more expensive than iron, and he wished to know from roads using steel wheels whether there had been any increase within the past year or two in the flattening of such wheels from sliding.

MR. MARDEN said his road had steel wheels from four different makers in the passenger service, and he had yet to find one of them that had been flattened from sliding; while iron wheels were found in that condition every day. One reason why steel wheels were not liable to flatten was because they were perfectly round, or as nearly so as it was possible to make them. There were also no imperfections in the tire to catch the brake-shoes. Another reason might be in the contact of steel with iron, instead of iron with iron, as in the case of the iron wheel and brake-

shoe. He had no doubt that if iron wheels could be made perfectly round the number of flattened wheels would be greatly diminished.

MR. ADAMS said he had not overlooked the matter of interest on the cost of steel wheels. In one of the papers accompanying the report of the committee was an estimate on the basis of actual mileage on the Boston & Albany road, and also another estimate on the basis of 50,000 miles for iron wheels, in which there was a difference of $25 or $30 in favor of the iron wheels. It would, of course, be necessary that steel wheels should make a longer mileage in order to place them on a par with iron wheels; but it must be noticed that in the estimate he had only taken about one-half of the average mileage of the steel wheels. These wheels had been used on the passenger cars, engines and tenders of the road for twelve years, during which time 413 wheels had failed from various causes. A slight flaw in the bloom, even if no larger than a pin-head, would cause a seam in the tire which might be 3 in. long or 2 ft. long. At that point a fracture would start. But a breakage never occurred abruptly, as in iron wheels, but always gradually. There were never any continuous flat spots from sliding, but on examination a large number of little spots would frequently be found no larger than a five-cent piece, but not sufficient to affect the wearing of the wheel. He believed that a perfectly sound Washburn tire would wear longer than any other tire that is made, because the steel is harder and the breakages that occurred were doubtless owing to the use of steel that is too hard. The reason why iron wheels made less mileage on the Boston & Albany road than on most other roads was the frequent curves and heavy grades. They were run to a disadvantage. On a road like the Lake Shore the same wheels ought to make from 25 to 30 per cent. more mileage than on the Boston & Albany.

MR. McWOOD, of the Grand Trunk, said: We have now about 1,500 steel-tired wheels with wrought iron centers that have been in service on our road since 1876. We have never had an accident caused by the steel wheels. We had one English steel-tired wheel that broke, and we supposed it had been shrunk on too tight. This tire broke in two, and opened out about an eighth of an inch. I had a good deal of faith in the retaining rings which fastened the tire. I took the tire off: took a skin off the inside so as to allow it to come close together, and ran it in that condition nine months, mostly in the winter. I took it out because there was a sign of fracture along the root of the tread. This was the only steel-tired wheel of ours that broke. It was hardly fair, in comparing steel and iron wheels, to put the first cost of each on the same basis. When the iron wheel was worn out, the first cost of the entire wheel was thrown away, while with the steel wheel the tire only was thrown away, while the center remained good. In renewing the wheel it was only necessary to renew the tire. As to sharp flanges, I attribute them to the fact that the tires on the same axle are of unequal hardness. If a uniform grade of steel could always be used there would probably be very little difficulty of this kind. In all my experience with steel wheels I have never seen a single flat spot on the tires caused by brakes.

MR. MARDEN thought that sharp flanges, either on cast-iron or steel-tired wheels, were caused by trucks being out of square; or, if one iron wheel is larger than the other on the same axle, or if one wheel is pressed on half or three-quarters of an inch further from the journal than the opposite wheel, the tendency would be to make a sharp flange. In several instances he had taken out wheels worn sharp, and changed them to the other side of the truck, and always found that the wheels on the same side of the truck would wear sharp again.

MR. GOODWIN: There is one cause for flat wheels that has not been named here yet, and I think it is a more fruitful cause than any other, and that is that the wheels do not fit the rail on many roads. The rail is not so constructed as to fit the flanges of the wheels, but it presents a sharp point of contact which cuts into the flange. On our road, our percentage of wheels taken out which have sharp flanges is less than four per cent. I think part of that is due to the fact that our rail is so sharp as to fit the flanges of the wheels, and there is great advantage in that.

MR. ADAMS said that the testimony that had been produced in the discussion was very strongly in favor of steel wheels. He was willing to concede that their cheapness as compared with iron wheels had not been fully proved. There was much prejudice on many roads against steel wheels; but it was an established fact that they were safe. Incipient fractures showed a long time before there was danger, and afforded ample time to take care of the car. Such had been his experience for twelve years. His calculations had been based on the Washburn wheels, which were cheaper than some others, but the higher-priced wheels—the $80 ones—ought to make a good deal longer mileage. The 33-inch wheels in use on the Boston & Albany road included the paper, the English and the Washburn, and he was satisfied that all of them were safe; in fact, he would be willing to risk his life in riding over any road with steel-tired wheels.

THE recent burning of the Pullman sleeping car, on the Midland Scotch Express, is another illustration of the wonderful tenacity with which people in England cling to obsolete and clumsy methods in the running of passenger trains. In this case, although the emergency was critical and the danger great, there was no way of communicating with the engine driver but to pull a cord placed on the outside of the carriage over the window and close to the cornice; and, although there is a cord on both sides of the train, the one on the right hand side, in the direction in which the train is moving, is the only one that can be used to notify the driver when a car is on fire, or anything is wrong. And furthermore, a passenger must have "reasonable and sufficient cause" for pulling the cord, or incur a penalty for doing so not exceeding five pounds. This is the way a train going at the rate of 50 miles an hour, with one of the cars on fire, is stopped in England. Can not English ingenuity devise something better and still retain the compartment system?

"Yes, Judge," said the prisoner, "I admit that the back of my trousers were tangled in the dog's teeth, and that I dragged the animal away, but if you call that stealing a dog no man on earth is safe from committing crime."

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EDITORIAL ANNOUNCEMENTS.

Addresses.—*Business letters should be addressed, and drafts and money orders made payable, to* THE NATIONAL CAR-BUILDER. *Communications for the attention of the Editor should be addressed* EDITOR NATIONAL CAR-BUILDER.

Advertisements.—*Nothing will be inserted in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *The editorial department will contain our own views and opinions; and the rest of the reading matter, aside from advertisements, will be such as we consider of interest to our readers.*

Contributions.—*Articles relating to railway rolling stock construction and management, and kindred topics, by those who are practically acquainted with these subjects, are especially desired. Also early notice of changes in railroad officers, organizations and names of companies.*

Special Notice.—*As the* CAR BUILDER *is printed and ready for mailing on the last day of the month, advertisements, correspondence, etc., intended for insertion, must be received not later than the 25th day of the month.*

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FREIGHT CAR TRUCKS.

In a year or two from now there will be a million of freight cars on the railroads of this country, and nearly all of them will be mounted on four-wheel trucks. These trucks are now of a great variety of styles and patterns. Some have wooden frames, some iron, and some are of wood and iron combined. In their constructive design, the assortment includes almost everything between the extremes of good and bad, this result being the outgrowth of individual preference guided by no system and subject to no general regulation. Each road, and sometimes each road shop, has been in this matter a law unto itself. It has been discovered that inasmuch as the service which these cars perform is substantially the same, there is no reason why the trucks in all essential features of material and construction should not be alike, or of one general style of construction. However different the car bodies may be, as adapted to different kinds of freight, the trucks which carry the load should be of a uniform style, except perhaps for the carrying of live stock, milk, or other special freight requiring an easier spring motion. The fact should be recognized that, aside from mere ownership, there should be no such thing as "foreign" freight cars on any road. The system of interchange and the conditions growing out of it have done away with all that. The need of reform in the matter of trucks is imperative, and it remains to be seen whether railroad men are equal to the task of determining the details of the construction. The standard trucks are not to be similar in appearance merely, but must approximate mathematical exactness like duplicate patterns made from one pattern. They must be uniform, not only in design, but in workmanship. The design, the material and the construction must also be not only the best, but every railroad man must *know* that they are the best without any doubt o misgiving, so that there will be no inducement to build or use any other kind.

It is an open question whether such a truck, or one very nearly approaching it, may not have been already designed and built. If all the different kinds now in use could be assembled together, including the one most worthy of being selected as a standard, would it be an easy thing to identify this particular truck? Everybody who has given any attention to the problem knows it would not be, because there would be no certain means of determining whether it was or was not the best. A perfect truck, or an imperfect one for that matter, is a structure containing many parts, each one of which is vital to its functions as a whole. Each part must not only be of the right form and material, but must sustain its right relation to every other part. No part should be stronger or weaker relatively to the other parts than the integrity of the structure requires; and, as a whole, the mechanism should be so well adapted to the service for which it is designed as to admit of no change in its component parts or their mutual relations, without impairing its completeness. A truck answering to these conditions is in all probability just now a pure ideal. This may seem like trifling with the subject, or dealing in vague, commonplace generalities; but no complete freight-car truck will ever be built in disregard of these considerations. No truck will ever become a standard by merely giving it that name or voting it to be such.

The chief members of a truck are the wheels. To bring these to anything approaching uniformity and perfection is of itself a great undertaking. It would overtax our space to enumerate all the diversities and irregularities of wheel construction. There is trouble with the form of flanges, width of tread and width of the wheel; the wheels are not round nor balanced; the gauge is unsettled; the hub bore is not concentric with the circumference; the utility of coning is seriously questioned; they are also put on the axles in an unsystematic way so they won't "track;" there is no uniform point on the tread for measuring, and so forth. So much for the foundation, saying nothing about the axles. The superstructure, with its endless variations and complexities of detail, its frame work, brake connections, rigid and swing bolsters, journal boxes and brasses of all patterns in lots to suit purchasers, center plates, side bearings, pedestals and other castings, presents a formidable assemblage of incongruities, which it would seem discouraging to attempt to reduce to order were it not that nothing is impossible but the unattainable. Now that the Car-Builders' Association is organized for serious work, there is no more suitable thing for it to take hold of than this matter of a standard truck for freight cars. If the association can, within a period of two years, determine the construction of such a standard, recommend it by a unanimous vote or even by a good round majority, and have it adopted as fast as new trucks are needed to replace old ones, the achievement will be a conspicuous one in the history of railroad progress.

The report of the committee on trucks and the accompanying illustrations, published in our last issue, show that a beginning has been made, and although only a beginning, it is manifestly a step in the right direction. It consisted in testing the capacity of fourteen kinds of iron side-framing, and affords an interesting exhibition of the comparative strength of the different sizes and arrangement of arch-bars in resisting compressive strain. The weak points are indicated in every case as a guide in the construction of trucks of this class, and if the tests could be extended to a much greater extent, so as to show the comparative strength of different shapes of iron in the form of arch-bars and their connections and fastenings, a result would be reached that would help very much to simplify the problem. In fact, there does not seem to be any other way to reach a final solution but by means of a continuous series of experimental tests under the direction of the best mechanical skill and experience. This, however, will necessitate organization and systematic work.

A NEW CLASS OF RECORDS AND STATISTICS WANTED.

The voluminous railway statistics to be found in commissioners' reports, manuals, and elsewhere, are very good and serviceable so far as they go, and so far as they are correct and reliable. The information they contain, however, relates chiefly to cost of construction and equipment, earnings of traffic, general expenses, freight and passenger mileage, rates, tonnage, etc. A knowledge of these particulars, although highly important as indicating the financial condition of the roads, falls very much short of what is needed in order to secure the greatest economy and efficiency in their operation. In this class of statistics we search in vain for that kind of information which has been so often asked for in the numerous circulars sent out by the committees of the Master Mechanics' and Car-Builders' Associations. The increasing volume of railroad business is creating every day a more pressing need for some systematic record that will indicate with reasonable certainty the comparative economy of the various methods of construction, more especially in reference to freight cars, the number of which is increasing every year at such a prodigious rate. The number now is more than twice what it

was ten years ago, and it is safe to say that ten years hence it will be twice what it now is, and the interchange of cars between the various roads and systems of roads will be increased in a still greater proportion. If any thing is to be done to remedy the evils of diversity, the work must be begun without delay, or it will become well nigh impracticable from its very magnitude. The obstacles which lie in the way will be more and more formidable every year. Any one who is familiar with the questions and answers which have formed the staple of some of the committee reports made to the Car-Builders' Association during the past six or eight years, will readily understand the nature of these obstacles. The questions, of course, have been more numerous than the replies, for the obvious reason that they were more easily asked than answered; and as to any practical outcome, the answers were often so conflicting as to leave the problem in regard to which information was wanted in a more unsettled state than before. So unsatisfactory was this method of getting at facts that it has of late been partially abandoned. As samples of the kind of replies made to circulars, we may cite the following:

In regard to car axles, one report says that the majority of those replying to the circulars favor steel as less liable to heat, while others prefer iron because it will run the coolest.

In another case, the majority favor cast iron as a material for brake shoes, while others prefer wrought, chilled or malleable iron, and some, good, well-seasoned oak timber.

A majority in one case prefer iron wheels to steel, and iron body-bolsters to wooden ones; but the minority do not coincide.

One report has 23 replies from parties connected with as many roads upon which journals are used ranging from $3\frac{1}{2} \times 5\frac{1}{2}$ to $3\frac{1}{2} \times 7$, and the brasses, equally numerous, varying in weight from 6 to 14 lbs., and composed of copper, zinc, tin, antimony and lead, in widely varying proportions.

Another report says 11 replies favor iron truck frames, 2 favor wood frames, and others a combination of wood and iron; 11 are for swing-motion, 2 for rigid frames, and 2 are in doubt; 8 think cars with swing-motion trucks can be pulled easiest, while 6 think rigid truck cars pull easiest.

In regard to length of wheel-base, the same report says that opinions vary from 6 feet to "as close together as possible;" 14 replies say that side-bearings should take as little weight as possible, and 1 insists that they should take all the weight; 10 would hang brakes to truck frame, and 4 would hang them to car body; 6 would have brakes on one truck only, while 8 would have them on both trucks; a majority would put the brakes outside the wheels, and others would have them between the wheels.

These samples might be multiplied indefinitely, but the few we have cited will serve to indicate the chaos of opinion which prevails among railroad men, and among car-builders more particularly, in regard to almost every detail of construction and practice as regards freight cars. It is clearly impossible to harmonize these discordant views by merely voting that this or that plan, or pattern, or material, is better than another. Votes can never determine facts—except the fact of voting—otherwise, it could be determined at once whether the moon is inhabited, by calling the yeas and nays on the question in a scientific convention. In order to improve the construction of cars so as to avoid the existing diversity of parts, and at the same time have every part made of the right material and of the best forms and patterns, with no superfluous strength or weight, there must be a vast quantity of preliminary testing under the supervision of the best mechanical skill, and a record made of the results that will be accepted as a finality. Either this, or each road must organize a system of its own for keeping a record of the failures and breakages in the running gear of its own cars, as an unerring means of ascertaining defects and determining the remedy to be applied. If such records were systematically classified so they could readily be referred to, they would furnish answers to a vast number of interrogatories contained in committee circulars which now go unanswered for lack of the requisite information. There are some roads which do keep such records to a certain extent, and they are among the best managed and most prosperous. Other roads do not keep them on account of the expense it entails. Their officers would like to know all about the operating economy of the other class, provided the information could be had without furnishing similar information in return, while the officers of not a few roads are quite satisfied with what they know already and look with indifference if not distrust upon any knowledge derived from outside sources. These records are rarely published, and in some cases are not even used to the advantage of the roads that keep them.

All this has been said many times before. The great advantages to be derived from the general adoption of standards in freight car construction have been harped upon until the subject is threadbare. But, as we have said, the time is at hand when something must be done to prevent the evils complained of from assuming a far more aggravating form. It may seem like playing on the old string to talk of a new system of records and statistics, or a mechanical laboratory for making preliminary tests. But something of this sort must be projected and carried into effect, or it is not easy to see how the reorganized Car-Builders' Association can avoid traveling in the old rut—or, in other words, how they are ever going to determine upon and recommend specific standards of construction that are absolutely the best—not because they are voted to be such, but because they are the best, independently of the voting.

We have just sent out a large number of circulars requesting information that will enable us to make the needful corrections in our Directory. The rapid increase in the number and traffic of the roads, causes not only a corresponding increase of officers, especially those of subordinate grades, but a multitude of changes in the way of promotions, transfers, resignations, etc. Unless we are advised of these changes when they occur we can not make the corrections in our list. We have got to have the information in some way, and although we make the stereotyped request every month that our readers will furnish us with it, it is no uncommon thing to receive letters couched in terms of the most abject apology for "presuming to take the liberty," etc., of informing us that Mr. So and So is no longer in such a position, but has been superseded, etc. We would request our correspondents of this class to drop their apologetic tone and write to us ten times oftener than they have ever done before. We will willingly remunerate them for the postal cards and the time spent in writing.

The Car-Builders' Monthly Meetings which have been held during the winters for several years past, at 113 Liberty street, New York, will be continued during the present season, but under a new organization called the "Car-Builders' Club." We do not understand that this change in organization and name is to change in any way the character of the meetings. Access to the rooms on these occasions will be free to all who may desire to talk or listen. These meetings have heretofore been identified more or less with the Car-Builders' Association, and many people living at a distance have been led to suppose that they were monthly meetings of the association itself, when, in fact, it has often been the case that only a small proportion of those present were actual members of it. The change of name, we are informed, is more for the purpose of correcting this impression than as indicating any change in the meetings, which are and have been quite independent of the association.

The first regular meeting for the season will be held at the rooms of the club, as above, on Thursday evening, December 21, when the subject of "Gauges for Measuring Screw-Cutting Tools and Standard Sizes of Bar-Iron," will be discussed. Specimens of the Harvey Manufacturing Co.'s patent, interchangeable, self-fitting nut will be exhibited and explained. It is also proposed that at the January meeting the subject of Wheel Flanges, Gauge-Sections and Gauges for each, be considered.

A party of railroad men, assembled at a depot, were "guessing at the amount of oil required for one oiling of an ordinary 8-wheeled passenger car. The lowest guess was 1 gallon and the highest $10\frac{1}{2}$ gallons. By actual experiment it took 11 gallons of oil, which amount, saturating the waste in the packing-boxes, would run the car 200 miles a day for six or eight weeks. It is said that 11 gallons are enough to oil the wheels of every car in a long express train. Some of these old railroad men ought to be able to give figures or facts. They would be items of interest. —*Elevated Railway Journal.*

In a discussion on this subject at one of the annual meetings of the Car-Builders' Association a few years ago, Mr. Adams, of the Boston & Albany road, said that a new passenger car of that road run 20,400 miles at the rate of 200 miles a day, on 14 gallons of mineral oil, costing 30 cents a gallon. The oil was carefully measured and the waste packing weighed, and the whole expense was $6.60. In the same discussion, Mr. Hopkins, the inventor of the lead-lined journal bearing, stated that as an experiment he had run a Pullman palace car between Jersey City and Chicago (after the first packing and oiling), with half a gill of oil to each journal for the round trip, and that the car was run on this quantity of oil per trip until the wheels were worn out. Mr. Van Houten, of the Pennsylvania road, also said that he had run a passenger car over 60,000 miles on 4 ounces of oil, but he omitted to say how often the oil was applied. This economy in the use of oil is only possible, of course, when the matter receives careful attention, as in the case of passenger cars that are run as an experiment. Freight cars that leave the home shop and are not seen again by the owners for three or four months cannot be run on any such allowance.

If the unwritten rules of civility which are recognized by people of good breeding could be reduced to plain print and hung up in every railroad passenger car, it would doubtless have a good effect. If it did not restrain to any appreciable extent the selfishness and vulgarity which seem to be inherent in a large portion of traveling humanity, it would at least give some people a silent hint about sundry improprieties and points of etiquette of the nature of which they seem to be profoundly ignorant. It would, for example, let people know that a pair of boots are as much out of place on a car seat cushion as on a drawing-room sofa in a private house. It would also tend to check the beastly practice of bracing one's knees against the back of the next seat, which for the time being belongs exclusively to whoever happens to occupy it, and any interference with the comfortable enjoyment of it by the occupants is an inexcusable piece of rudeness. Persons next the windows would also learn that it is not the right thing to hold newspapers spread out full size, so as to intercept the light and prevent others from reading who occupy the other half of the seat. The plan suggested would be a much needed reminder to many people of both sexes, that a railroad passenger coach, while on duty, is a joint possession, and that each individual occupant can be the sole proprietor of only so much of it as he can cover when sitting in an upright posture with his feet extended to the foot-rest of the next seat. Allowance must, of course, be made for overgrown people and deadheads. This is a necessity from the way society is organized.

It will be seen by the report of the committee of the Car-Builders' Association on the subject of automatic draw-bars, which we print elsewhere, that a new and important step has been taken in the matter of ultimate uniformity in the use of these devices on railroads. The report is made to the Executive Committee, as provided in the new constitution of the association, as no draw-bars, couplings, or other patented devices can be recommended by the association to the roads for adoption, unless they have first been recommended to the association by that committee. The committee making the report are unanimous in the opinion that "an automatic coupler is desirable if one can be found to meet the requirements." This is cautious and conservative, and evinces no undue precipitation. The committee, however, have been bold enough to mention the names of no less than 40 of these devices, and to classify them as follows: Five are put in class "A," as having "special merit," and are recommended for trial. Three are classed "B," and are also supposed to have special merit and to be worthy of a trial. Ten more are specified as "worthy of mention;" and 22 as "not being practicable or applicable to freight cars." This is looking the problem straight in the face—taking it by the horns, so to speak. It is practically narrowing it down to five devices, and it remains for the executive committee to choose one from the five and recommend it to the association. Although the prospect is encouraging, we would admonish the fortunate few who have won the distinction of being placed in class "A," not to be prematurely sanguine. The executive committee will probably move slowly in such an important and delicate matter, and should it decide to make any positive recommendation to the association, that body will be likely to move more slowly than the committee in reaching the final point of recommending a particular draw-bar or coupling device to the respective roads. The association, at all events, deserves to be congratulated on the evidence afforded by this report that it is in a fair way of getting out of the rut it has so long traveled in the matter of patented inventions.

The Association of American Railroad Superintendents adopted a resolution at its recent annual meeting, recommending the members of the Association not to employ discharged employés of other railroads, unless they present a letter from the superintendent of the road from which they were discharged, stating the cause of such discharge.

This resolution, if generally approved and carried into effect, would enable any superintendent to prevent a discharged employé from obtaining employment on other roads, by simply withholding the letter stating cause of discharge. The letter may be withheld from good or bad motives, or what is quite possible, from a mistaken impression as to the alleged cause. In either case, the person discharged would go forth branded to all intents and purposes, and deprived of all chance of getting employment on other roads. The discretion of the superintendent in the matter is unlimited. Do all superintendents place implicit confidence in one another in matters relating to the business of their respective roads? That they do, will hardly be asserted; nor will it be held that all discharged employés are utterly depraved. In aggravated cases it would be a protection, to be sure, to other roads, if a vicious and incompetent employé were dismissed without a letter showing cause as provided in the resolution; but it would seem quite proper that the discretion of the superintendent should at least be limited to aggravated cases, and that the nature of the aggravation should be set forth in the resolution in a specific manner. Taking a broader view of the subject, which would include, of course, the possibility of legislative interference, would it not be better to say nothing about the cause for which an employé is discharged, unless it is asked for by the superintendent of a road to whom he may apply for a position? It is stated that in Germany, where the railroads are under government supervision, an employé may be degraded from a higher to a lower position, but can not be discharged except for the gravest offenses, and even then he may appeal to the Minister of Justice for a hearing of the case, and be reinstated if it shall appear that he has been unfairly treated.

In a brief paragraph in our last issue it was stated that the C., C., C. & I. road had received ten new passenger cars from the Wason Manufacturing Co., Springfield, Mass., and that the inside finish was in plain mahogany,

without moldings or panels, which gave the car a bare and unfinished appearance. This information was received from a correspondent who had seen some of the cars after they had been placed on the road. The builders claim that the statement does them injustice, as it manifestly does. They say that they have built many coaches with the same style of finish for the Central of New Jersey, Old Colony, Maine Central, Connecticut River, and other roads, and furthermore, that the officers of the C., C., C. & I. have expressed themselves as being very much pleased with those built for them. The paragraph referred to was no doubt hastily written, and in order to correct any wrong impressions that may be caused by it, we have examined some of the cars of this style of finish built for the Central Railroad of New Jersey. There is certainly nothing in their interior decoration that would strike an ordinary observer as being showy or elaborate. As contrasted with the tawdry and stunning styles which prevailed a few years ago, and which are still the rule rather than the exception on some of the western roads, they are plain, but by no means unfinished either in appearance or otherwise. They are, in fact, very handsome cars. The panels, moldings, window sashes and doors are mahogany. The panels between the windows are continuous to the cornice, and have a plain surface relieved by a channeled groove on each side, and a little carving diagonally across the center. Above the windows, and between the upright panels, are small horizontal panels with rectangular grooves crossing at the corners; and between these and the window top, a central rosette carving, with three short horizontal grooves on each side. The cornice consists of a light molding. There is nothing conspicuous in this style of finish. It presents no violent contrasts, but is well subordinated, rich, effective and pleasing, unless the people who look at it are of the "Dolly Varden" class. The construction is not subordinated to the ornament, but the ornament to the construction, a principle, the importance of which is sometimes overlooked. In this case the principle may have been adhered to a little too rigidly. Car manufacturers, in the matter of inside finish, must do the best they can with the material in vogue. Solid mahogany is now all the rage, but it will in due time give place to something else that will light up better, and give to a car a more cheerful appearance. There can be no question, however, with respect to its exceeding richness and durability in all kinds of cabinet work.

We may add that the cars of this class built for the Central of New Jersey have 16 windows on a side. The glass is 20×30 in. The head-linings are of canvas and very handsomely painted. The lighting is by three double-burner chandeliers. The hat-racks are much smaller than usual, but with plenty of sharp and angular points to make mischief in a smash-up, if they should come in contact with any portion of the human anatomy.

Railway Signals.

At the meeting of the American Association of Railway Superintendents, held in New York, Oct. 18, the following signals were approved for general adoption:

Enginemen's Signal by Whistle.—One short blast of the whistle is a signal to apply the brakes—stop.

Two long blasts of the whistle is a signal to throw off the brakes.

Two short blasts of the whistle when running is an answer to signal of conductor to stop at next station.

Three blasts of the whistle when standing, is a signal that the engine or train will back.

Three short blasts of the whistle while running is a signal to be given by passing trains when carrrying signals for a following train. Four short blasts is the answer to it.

Four long blasts of the whistle is the signal to call in the flagman or signalman.

Six short blasts of the whistle is the engineman's call for signals.

Two long, followed by two short blasts of the whistle when running, is a signal for approaching a road crossing at grade.

A succession of short blasts of the whistle is an alarm for cattle, and may be used to call the attention of the trainmen to danger.

One long blast is a signal for approaching stations, railroad crossings or junctions.

A blast of the whistle of five seconds' duration will be considered as a long blast.

Conductor's Signal by Bell Cord.—One tap of the gong when the engine is standing is a notice to start.

Two taps of the gong when the engine is standing is a notice to call in the flagman.

Two taps of the gong when the engine is running is a notice to stop at once.

Three taps of the gong when the engine is running is a notice to stop at the next station.

One tap of the gong when running will be regarded as a warning that the train has parted, and the enginemen will follow the rule prescribed in that emergency.

A lamp, hat or hand swung across the track is a signal to stop; raised and lowered vertically, a signal to move ahead; swung in a circle is a signal to move back.

It was resolved that, in the opinion of the association, two or more colors should not be used upon locomotives of leading trains as a signal for following trains.

Injunction No. 109 has just been filed or laid upon the Texas Trunk. It now has one injunction to every crosstie, a suit to every culvert, and a judgment to every bridge, with 400 law offices to hear from. A fellow shipped a cord of wood over it the other day, the freight on which was 40 cents. Thirteen garnishments were run upon him before he had time to pay it.—*N. O. Times-Democrat.*

Trouble with the Jaffa & Jerusalem Railroad.

Ben-Ali-Sneezer, late one afternoon,
Met Sheik Bak-Gammon on old Horeb's mount,
And thus he, in the language of the East,
His multifarious hardships did recount:
"O Sheik, I bow me in the dust and mourn,
For lo! whilst browsing on the fertile plain,
Two of my choicest heifers—fair and fat—
Were caught in limbo and were duly slain
By that infernal pest of recent birth—
The half past eight accommodation train!"

Then quoth the Sheik: "One of my whitest lambs,
Which I did purpose soon to drive to town,
While frisking o'er the distant flowery lea
Was by that selfsame fatal train run down.
Now, O Ben-Ali! by the prophet's beard,
What are we ruined shepherd folk to do?
Suppose we take our troubles into court—
You swear for me and I will swear for you;
And so, by mutual oaths, it's possible
We may most hap'ly pull each other through."

Ben-Ali-Sneezer some months after met
The Sheik Bak-Gammon, and inclined to sport,
The two sat down upon a cedar stump
To talk of their experiences in court,
Ben Ali quoth: "Them cows was thin as rails—
Now that they're gone, it's mighty glad I am!"
Bak-Gammon said: "Now that the judgment's paid,
I don't mind telling you that slaughtered lamb,
So far from being what you swore in court,
Was, by the great horned spoon, not worth a —!"
—*Denver Tribune.*

Recent Reports of Railway Rolling Stock.

Chicago and Eastern Illinois.—56 engines; 15 passenger, 8 baggage and 3 mail cars; 713 box, 104 stock, 20 flat, 2,197 coal and 23 caboose cars; 1 pay and 6 service cars; total cars, 3,090.

Mobile & Ohio.—75 engines; 28 passenger, 10 baggage and mail, 6 express, 757 box, 150 stock and 320 flat cars; 2 special and 80 service cars; total cars, 1,353.

Lake Erie & Western.—43 engines; 34 passenger train cars and 1,589 freight cars; total cars, 1,623.

Old Colony.—115 engines; 225 passenger, 43 baggage, 902 box, 40 stock, 644 platform, 72 6-wheel stone, 1,192 coal and gravel and 6 caboose cars; total cars, 3,124.

Eastern.—102 engines; 172 passenger, 44 baggage, mail and express cars; 1,880 freight and 76 service cars; total cars, 2,172.

West Jersey.—23 engines; 58 passenger, 10 combination, 6 baggage, 26 box, 2 stock, 74 flat, 97 dump and 6 caboose, 26 hand and 20 push cars; total cars, 325.

Nashville, Chattanooga & St. Louis.—87 engines; 40 passenger, 4 mail, 14 bagbage, 538 box, 52 stock and 1,272 flat cars; 1 pay car, 2 wrecking cars and 1 pile-driver; also 4 locomotives; 4 passenger and 1 baggage car; 12 box, 2 stock and 36 flat cars of 3 ft. guage on the Centreville and Duck River branches; total cars, 1,979.

Central Vermont.—107 engines; 103 passenger and 2,391 freight cars; total cars, 2,494.

Ohio & Mississippi.—112 engines; 44 passenger, 26 baggage, mail and express, 1,394 box, 151 stock and 861 coal and flat cars; total cars, 2,476.

Northern Pacific.—158 engines; 62 passenger, 7 sleeping, 1 dining, 29 baggage, mail and express cars; 1, 734 box, 489 stock, 1 powder, 197 coal, 2,265 flat and 72 caboose cars; 1 pay, 3 business and 1 construction passenger cars; 10 pile-drivers, 1 accommodation and 338 boarding cars, 64 additional engines are under construction; total cars, 5,211.

Central Pacific.—372 engines; 250 passenger, 31 mail and express, 110 second class and smoking, 56 baggage and 4 officers' cars; 3,493 box, 3,448 platform, 125 caboose, 135 dump, 423 section, 421 hand and 123 miscellaneous cars; total cars, 8,619.

Proposed Association of Street Railway Men.

The following circulars relate a commendable scheme of associating street railway officials in permanent organization:

LOUISVILLE, November 8, 1882.

DEAR SIR: Permit me to call your attention to a matter which has for some time been considered by a number of street railroad men, viz.: The formation of an association based upon well established principles governing similar organizations, and the object of which shall be the promotion and advancement of knowledge, scientific and practical, in all matters relating to the construction, equipment and management of street railways; the establishment and maintenance of a spirit of fraternity between the members of the association, by social intercourse and friendly interchange of information and ideas, to the end that the best service may be obtained at the least possible cost.

With this object in view, I have been requested by a number of street railroad officials, both in the east and the west, to issue this circular, and urge that your company send a representative to a convention to be convened in the city of Boston on the 12th day of December, 1882, for the purpose of organizing and adopting a constitution for the government of such an association.

It is expected that most of the prominent street railroad companies in the United States will be represented. Will you be kind enough to not fy Mr. J. E. Rugg, superintendent Highland Street Railway Company, Boston, Mass., at once if your company will send delegate, in order that adequate accommodations for the convention may be made in advance. As soon as replies are received arrangements will be made, and you will be notified of the location and the hour the convention will meet.

Very respectfully, etc.,
H. H. LITTELL,
Superintendent Louisville City Railway Company.

CINCINNATI, Nov. 10, 1882.

In view of the national convention of the representatives of the various street railroads throughout the country, which is proposed to be held in Boston on the 12th proximo, the suggestion has been made that preliminary to such meeting a state organization of the street railway companies in Ohio should be effected. The benefits of such an organization are manifest to all engaged in the business. Upon consultation with some of the officers of companies in other cities, it was suggested that this call should be issued to all the companies in the state to meet in this city on Wednesday, the 22d instant, for the purpose of forming a State organization and for consultation upon matters of mutual interest.

Please notify the undersigned whether a representative of your company can be expected on the day named, and you will at once be notified of the hour and place of meeting.

Very respectfully,
R. B. HOPPLE.
Vice-President Cincinnati Street Railway,
On behalf of the Cincinnati Companies.

THE Shultz Belting Co., of St. Louis, manufacture belting from leather which is a combination of tanned leather and rawhide, having the strength of rawhide with all the good qualities of oak-tanned leather, and making a belt that will run slacker and at the same time transmit a maximum of power, preventing hot journals and saving wear and tear of machinery. The company's works comprise six large buildings, and employ over 100 men.

WE print the following testimonial to Messrs. A. French & Co. and the French Spiral Spring Co., of Pittsburg, tendered to them by the passengers on the Pullman car "Corinthia," on their trip to Philadelphia in June last to attend the Car-Builders Convention:

ON BOARD PULLMAN CAR "CORINTHIA,"
en route from Chicago to Philadelphia,
June 13, 1882.

Whereas, Messrs. A. French & Co. and the French Spiral Spring Co. have with characteristic generosity, placed at our disposal from Chicago to Philadelphia, the new and elegant Pullman Palace "Corinthia," thus converting what might otherwise have been a tiresome journey into one of unalloyed pleasure, including their princely hospitality during their brief stay in Pittsburg, therefore, be it

Resolved, That we unite in expressing our hearty thanks for their kindness in contributing so largely to the pleasure of our trip to the convention, and desire particularly to convey our appreciation of the efforts of Mr. GEO. W. MORRIS, under whose immediate supervision this beautiful car has been so profusely decorated with rare and costly flowers, and whose whole-souled and untiring attention to our comfort and pleasure we hope never to forget.

B. K. Verbryck and wife, Chicago, R. Island & Pacific R. R.
S. J. Hayes, Illinois Central R. R.
S. Townsend and wife, Chicago & Alton R. R.
H. S. Bryan, Chicago & Iowa R. R.
J. H. F. Wiers and wife, Toledo, Cin. & St. Louis R. R.
A. H. Handlan, Jr., M. M. Buck & Co., St. Louis.
Wm. B. Rice and wife, Chicago, St. Paul, Min. & Omaha R. R.
R. W. Bushnell and wife, Burlington, C. Rapids & North. R. R.
Tho. Aylesbury and wife, Kan. City, St. Jo. & C. Bluff R. R.
John R. Gordon, Union Pacific R. R.
Robt. McPherson, Flint & Pere Marquette R. R.
W. B. Snow, Illinois Central R. R.
Jas. McGee, Houston & Texas Central R. R.
R. M. Hemphill, Wabash, St. Louis & Pacific R. R.
J. S. White, Pittsburg, Ft. Wayne & Chicago R. R.
Wm. Fuller, New York, Penn. & Ohio R. R.
R. S. Ramsey, Ohio Falls Car Co.
Chas. E. Gore and wife, Lafayette Car Works.
H. L. Cooper and wife, Lake Erie & Western R. R.
W. H. Silverthorn, Cleveland W. R. Co.
Geo. Hackney and wife, Atchison, Topeka & Santa Fe R. R.
B. McDevitt, Chicago West Division R'y.
Tho. A. Bissell, Dayton Car Works.
Miss Lottie L. Snow, Chicago, Ill.
Geo. M. Sargent, Congdon Brake Shoe Co.

Our Directory.

We note the following changes since our last issue. Readers are requested to give us prompt notice of changes when they occur:

Boston & Albany.—C. O. Russell has resigned the position of General Superintendent.

Burlington & Ohio River.—The office of General Manager has been abolished.

Chicago, Burlington & Kansas City.—Mr. Robert Law is appointed General Superintendent. He was recently on the Union Pacific.

Cincinnati, New Orleans & Texas Pacific.—R. Carroll has been appointed General Superintendent of Cincinnati Southern Division, in place of Cecil Fleming, who has been appointed Superintendent of the New Orleans Pacific Division of the Texas & Pacific.

East Broad Top.—A. B. Greenwood has been appointed Master Mechanic, vice G. A. Haggerty resigned.

Illinois Central.—Henry Schlacks has been appointed Acting Superintendent of Machinery, in place of J. S. Hayes deceased.

Illinois & St. Louis.—W. O. Hewitt has been appointed Master Mechanic, with office at Belleville, Ill. He was formerly on the Peoria Division of the Wabash, St. Louis & Pacific.

Indiana, Bloomington & Western.—J. H. Wilson has been appointed General Superintendent.

Lehigh Valley.—Robert H. Sayer has resigned the office of General Superintendent of this road.

Manhattan Elevated.—The office of Purchasing Agent has been abolished, and its duties assumed by the General Manager.

Owensboro & Nashville.—W. L. Gude has resigned as Superintendent, and R. S. Bevier, the President of the company, will act as Superintendent also.

Sioux City & Pacific.—C. M. Lawler is appointed General Superintendent. He was recently connected with the Wabash, St. Louis & Pacific.

St. Louis, Keokuk & Northwestern.—Robert Law is appointed General Superintendent. He was recently on the Union Pacific.

Texas & Pacific.—Perry Stevens has been appointed Master Mechanic of Eastern, Transcontinental & New Orleans Divisions, in place of W. Garrison, resigned.

Toledo, Cincinnati & St. Louis.—J. G. Clifford is appointed Master Mechanic, vice A. E. Stewart, resigned.

Missouri Pacific.—O. A Haynes is Superintendent of Motive Power and Machinery of this road, and also of the International & Great Northern.

New York, Chicago & St Louis.—John W. Dogherty has been appointed Purchasing Agent, with office at Cleveland, Ohio.

New York, Ontario & Western.—E. Canfield has been appointed Superintendent of Southern Division, with office at Pappan, N. Y.

New York, & New England.—Elliot Holbrook is appointed Superintendent of the Western and Spriagfield divisions and Melrose Branch, vice Mr. T. W. Kenman, resigned.

Ohio & Mississippi.—J. H. Setchel, late of the Kentucky Central, has been appointed General Master Mechanic.

Employment.

Advertisements will be inserted under this heading for one dolla for each insertion.

WANTED.—A permanent position by a first-class Draughtsman, who is thoroughly acquainted with the construction of Locomotives, other Railway Rolling stock, and all kinds of Machinery. Has experience, and can furnish good recommendations. Address "E. O. H.," NATIONAL CAR-BUILDER, 144 N. Clark Street, Chicago, Ill.

DIRECTORY

of the Railroads of the United States and Canada, showing the gauge, length of road, number of locomotives and number of cars; and giving the names and titles of their principal officers in charge of the operating, purchasing and rolling stock departments.

A

Adirondack R. R. 4-8½ gauge 62 m. 3 lo. 62 cars.
C. E. Durkee, *Supt*. Saratoga, N. Y.
Jacob Myers, *M. M.* Saratoga, N. Y.
Jas. J. Travers, *M. C. B.* Saratoga, N. Y.
Alabama Great So'n R. R. (*See Cin., N. O. & T. P.*)
Albany & Susquehanna R. R. (*See D. & H. Canal Co.*)
Albert Ry. 4-8½ g. 51 m. 3 lo. 32 cars.
G. A. Robinson, *Manager* Hillsboro, N. B.
Jas. McKay, *M. M. & C. B.* Hillsboro, N. B.
Allegany Central R. R. 3 gauge 30 miles.
Geo. D. Chapman, *Gen. Man.* Angelica, N. Y.
W. O. Chapman, *Gen. Supt.* Friendship, N. Y.
Allegheny Valley R. R. 4-9 g. 259 m. 75 lo. 1968 c.
David McCargo, *Gen. Supt. & Pur. Agt.*; and
B. Price, *Supt.* (Riv. Div.) Pittsburg, Pa.
A. A. Jackson, *Supt.* (L. G. Div.) Brookville, Pa.
Geo. W. Glass, *M. M.* Verona, Pa.
R. Gunning, *M. C. B.* Verona, Pa.
Alliance & Lake Erie R. R. 3 g. 30 m. 3 lo. 112 cars.
W. E. Lewis, *Gen. Man.* Alliance, O.
C. C. Dorman, *M. M. & M. C. B.* Alliance, O.
Annapolis & Elk Ridge R. R. 4-8½ g. 20 m. 4 lo. 29 c.
W. H. Bians, *Supt. & Pur. Agt.* Annapolis, Md.
John L. Beall, *M. Mach.* Annapolis, Md.
Arkansas Midland R. R. 3-6 g. 48 m. 4 lo. 45 cars.
A. H. Johnson, *Pr. & Gen. Man.* Helena, Ark.
J. B. Johnson, *M. M. & M. C. B.* Helena, Ark.
Ashland Coal & Iron Ry. 4-8½ g. 14 m. 7 lo. 425 c.
Douglas Putnam, Jr., *Gen. Supt.* Ashland, Ky.
Robt. Peebles, *Pur. Agt.* Ashland, Ky.
E. M. Roberts, *M. M.* Ashland, Ky.
Ashtabula & Pittsburgh Ry. (*See Penna. Co.*)
Asheville & Spartanburg R. R. 5 g. 49 m. 2 lo. 12 c.
Jas. Anderson, *Supt. & Pur. Agt.* Spart'b'g, S.C.
Wm. Platt, *M. M.* Spartanburg, S. C.
W. B. Brown, *M. C. B.* Spartanburg, S. C.
Atchison, Topeka & Santa Fé R. R.
4-8½ g. 1,846 m. 203 lo. 8,108 cars.
C. C. Wheeler, *Gen. Man.* Topeka, Kan.
D. J. Chase, *Gen. Supt.* Topeka, Kan.
W. S. Mellen, *Asst. Gen. Supt.* Topeka, Kan.
F. M. Smith, *Pur. Agt.* Topeka, Kan.
Geo. Hackney, *Supt. Lo. & Car. Dept.* do.
Clem. Hackney, *M. M.* Topeka, Kan.
Eastern Div.: C. M. Rathbun, *Supt.* Topeka, Kan.
Henry Hull, *G. F. Car Dept.* Topeka, Kan.
John Fagan, *M. M.* Atchison, Kan.
J. M. Smith, *M. M.* Kansas City, Mo.
W. W. Wheeler, *M. M.* Emporia, Kan.
Mid. Div.: H. R. Nickerson, *Supt.* Nickerson, Kan.
W. Y. Johnson, *M. M.* Nickerson, Kan.
J. Q. Adams, *M. M.* Dodge, Kan.
Col. Div.: W. W. Borst, *Supt.* La Junta, Col.
A. C. Stiles, *M. M.* La Junta, Col.
D. H. Dotterer, *M. M.* Raton, N. M.
Las Vegas D.: Geo. L. Sands, *Supt.* Las Vegas, N. M.
L. H. Waugh, *M. M.* Las Vegas, N. M.
Rio G. Div.: Geo. L. Sands, *Supt.* Las Vegas, N. M.
M. C. Wheeler, *M. M.* Wallace, N. M.
T. Clyde, *M. M.* San Marcial, N. M.
H. P. Olcott, *M. M.* Deming, N. M.
Atlanta & West Point R. R. (*See Western of Ala.*)
Atlantic & Pacific R. R. 4-8½ g. 286 m.
F. W. Smith *Gen. Supt.* Albuquerque, N. M.
B. W. Angell, *Div. Supt.* Albuquerque, N. M.
Geo. Chalender, *Supt. M. P. & M.* do.
D. B. Sibley, *Pur. Agt.* Chicago, Ill.
Augusta & Knoxville R. R. 30 miles.
Gen. Supt. & M. M. Augusta Ga.

B

Baltimore & Ohio R. R.
4-8½ g. 1,539 m. 546 lo. 14,862 cars.
N. S. Hill, *Pur. Agt.* Baltimore, Md.
E. Ohio Riv. Div. 4-8½ g. 972 m.
W. M. Clements, *Mast. Trans.* Baltimore, Md.
N. E. Chapman, *Mast. of Mach.* Baltimore, Md.
A. J. Cromwell, *Asst. M. of M.* Baltimore, Md.
L. Packard, *M. C. B.* Baltimore, Md.
I. N. Kalbaugh, *M. M.* Baltimore, Md.
Wm. Edwards, *M. M.* Martinsburgh, W. Va.
Sam. Houston, *M. M.* Piedmont, W. Va.
Robert Maxwell, *M. M.* Cumberland, Md.
S. B. Crawford, *M. M.* Grafton, W. Va.
Alex. Laird, *M. M.* Parkersburg, W. Va.
Chas. Hirsch, *M. M.* Wheeling, W. Va.
Pitts. Div.: T. M. King, *Gen. Supt.* Pittsburg, Pa.
J. E. Sampsell, *M. of Mach.* Connelsville, Pa.
Trans-Ohio Divs.: B. Dunham, *G. Man.* Newark, O.
W. H. Harrison, *Mast. of Mach.* Newark, O.
E. L. Weisgerber, *M. M.* Newark, O.
H. M. Ingler, *M. M.* Bellaire, O.
O. B. Perkins, *M. M.* Zanesville, O.
Andrew Beckert, *M. M.* Sandusky, O.
F. J. Gunther, *M. M.* Chicago Junction, O.
Chi. Div.: John Thomas, *Supt.* Chicago, Ill.
Benj. Lowther, *M. M.* Garrett, Ind.
W. H. Wilkinson, *M. M.* Kingston, Ill.
Baltimore & Potomac R. R. (*See Penna. R. R.*)
Bangor & Piscataquis R. R. 4-8½ g. 63 m. 4 lo. 87 cars.
Arthur Brown, *Supt.* Bangor, Me.
C. S. Nason, *M. M.* Bangor, Me.
J. W. Comins, *M. C. B.* Oldtown, Me.
Barclay R. R. 4-8½ g. 16 miles.
F. F. Lyon, *Supt.* Barclay, Pa.
J. A. Hardenburg, *Pur. Agt.* 21 Cort. st., N. Y.
Wm. Johnson, *M. M.* Towanda, Pa.
Bedford, Springville, Owensburg & Bloomfield Ry.
3 g. 41 m. 5 lo. 65 cars.
Jas. W. Kennedy, *Gen. Supt. & Pur. Agt.*; and
Capt. Geo. Elliott, *M. M.* Bedford, Ind.
Richard G. Elliott, *M. C. B.* Bedford, Ind.
Bellaire & South-Western Ry. Co. 3 g. 42 m. 3 lo. 29 c.
S. J. Cochren, *Gen. Man.* Bellaire, O.
Bell's Gap R. R. 3 g. 23 m. 2 lo. 35 cars.
R. G. Ford, *Supt.* Bellwood (P. O.), Pa.
A. Zimmerman, *M. C. B.* Bellwood, Pa.
Bennington & Rutland Ry. 4-8½ g. 9 m. 10 lo. 214 c.
F. C. White, *Supt. & Pur. Agt.* Bennington, Vt.
G. W. Blanchard, *M. M.* Rutland, Vt.
Bingham, Canyon & Camp Floyd, and Wasatch & Jordan Valley R. R.'s.
3 g. 44 m. 7 lo. 300 cars.
J. G. Kennedy, *Gen. Man.* Salt Lake City, Utah
Geo. M. Young, *Supt.* do. do.
Bodie Lumber Co. 3 g. 34 miles.
Thomas Holt, *Supt. & Pur. Agt.* Bodie, Cal.
E. M. Luckett, *M. M. & C. B.* Bodie, Cal.
Boston, Barre & Gardner. 4-8½ g. 36 m. 7 lo. 107 c.
H. M. Witter, *Supt. & Pur. Agt.* Worcester, Mass.
Chas. F. Brigham, *M. M.* Worcester, Mass.
Boston Concord, Montreal & White Mts. R. R.
4-8½ g. 167 m. 34 lo. 677 cars.
James A. Dodge, *Gen. Man.* Plymouth, N. H.
J. Thos. Vose, *Pur. Agt.* Boston, Mass.
R. Adams, *M. M.* Lake Village, N. H.
G. A. Ferguson, *Asst. M. M.* Lake Village, N. H.
L. D. Pickering, *M. C. B.* Lake Village, N. H.
Boston, Hoosac Tunnel & W'n Ry.
4-8½ g. 53 m. 17 lo. 1,112 cars.
H. L. Morrill, *Gen. Man.* Mech'ville, N. Y.
J. L. Butman, *Supt.* Mechanicville, N. Y.
J. L. Wellington, *P. A.* Mechanicville, N. Y.
W. H. Powell, Jr., *M. M.* Mechanicville, N. Y.
John S. Ellis, *M. C. B.* Mechanicville, N. Y.
Boston, Lowell & Concord R. Rs.
4-8½ g. 360 m. 110 lo. 2,211 cars.
H. C. Sherburne, *Gen. Man.* Boston, Mass.
F. H. Nourse, *Pur. Agt.* Boston, Mass.
Jas. T. Gordon, *M. M.* Concord, N. H.
J. N. Lauder, *Supt. Roll. Stock* Concord N. H.,
Boston & Lowell Div.:
J. F. Crockett, *M. Trans.* Boston.
Concord Divs.:
H. E. Chamberlain, *Supt.* Concord, N. H.
J. T. Gordon, *M. M. & C. B.* Concord, N. H.
Boston, Revere Beach & Lynn R. R. 3 g. 9 m. 5 lo. 46 c.
L. C. Legro, *M. of Trans.* Boston, Mass.
C. A. Hammond, *Supt. & P. Agt.* Boston, Mass.
J. L. Folsom, *M. M.* Boston, Mass.
John Coghlan, *M. C. B.* Boston, Mass.
Boston & Albany R. R. 4-8½ g. 372 m. 248 lo. 6,012 c.
Gen. Supt. Springfield, Mass.
W. H. Barnes, *Asst. Supt.* Boston, Mass.
A. B. Underhill, *Supt. M. P.* Springfield, Mass.
F. D. Adams, *M. C. B.* Allston, Mass.
W. H. Russell, *Div. Supt.* Albany, N. Y.
H. W. Eddy, *Div. M. M.* Springfield, Mass.
J. B. Weston, *For. C. Sh.* Springfield, Mass.
G. H. Colby, *Div. M. M.* Boston, Mass.
T. B. Purvis, *Div. M. M.* Greenbush, N. Y.
J. E. Doran, *For. C. Sh.* Greenbush, N. Y.
Boston & Maine R. R. 4-8½ g. 206 m. 84 lo. 2,100 c.
J. T. Furber, *Gen. Supt. & P. A.* Boston, Mass.
Wm. Smith, *M. M.* Boston, Mass.
D. C. Richardson, *M. C. B.* Lawrence, Mass.
Boston & N. Y. Air Line. 4-8½ g. 53 m. 9 lo. 156 c.
Supt. New Haven, Conn.
Boston & Providence R. R. 4-8½ g. 67 m. 47 lo. 866 c.
A. A. Folsom, *Gen. Supt.* Boston, Mass.
Geo. Richards, *M. M.* Roxbury, Mass.
Jno. Lightner, *M. C. B.* Roxbury, Mass.
Bradford, Bordell & Kinzua R. R. 3 g. 30 m. 6 lo. 80 c.
B. C. Williams, *Supt. & Pur. Agt.* Bradford, Pa.
John Delaney, *M. M. & C. B.* Bradford, Pa.
Bradford, Eldred & Cuba R. R.
C. D. Williams, *Supt. & P. A.* Wellesville, N. Y.
Breakwater & Frankford R. R. (*See Junc. & Break.*)
Brighthope Ry. 3 g. 37 m. 3 lo. 193 cars.
Jas. R. Worth, *Supt.* Richmond, Va.
A. Gary, *Supt. Way & Works* Winterpock, Va.
Alex. Calder, *M. M.* Chester, Va.
Brunswick & Albany R. R. 5 g. 172 m. 13 lo. 170 c.
R. D. Meader, *Supt.* Brunswick, Ga.
Buffalo, N. Y. & Phila. Ry. 4-8½ g. 121 m. 34 lo. 2,436 c.
Geo. S. Gatchell, *Gen. Supt.* Buffalo, N. Y.
J. H. Poole, *Pur. Agt.* Buffalo, N. Y.
Allen Vail, *Supt. M. P. & M.* Buffalo, N. Y.
Henry Wagner, *M. M.* Buffalo, N. Y.
Buff. Div.: J. T. Gardiner, *Supt.* Buffalo, N. Y.
Roch. Div.: R. M. Patterson, *Supt.* Rochester, N. Y.
N. G. Div.: J. W. Watson, *Supt.* Olean, N. Y.
Buff., Pittsburg & W'n R. R. 4-9 g. 156 m. 331 506 c.
Oliver Watson, Jr., *Gen. Supt.* Buffalo, N. Y.
E. H. Witter, *Pur. Agt.* Oil City, Pa.
H. J. Bookhammer, *M. M.* Oil City, Pa.
John Monks, *M. C. B.* Oil City, Pa.
Burlington, Cedar Rapids & Northern Ry.
4-8½ g. 644 m. 62 lo. 2,120 cars.
C. J. Ives, *Gen. Supt.* Cedar Rapids, Ia.
Robt. Williams, *Supt.* Cedar Rapids, Ia.
T. Stickney, *Pur. Agt.* Cedar Rapids, Ia.
R. W. Bushnell, *M. M. & C. B.* Cedar Rapids, Ia.
Burlington & Lamoille R. R. 4-8½ g. 36 m. 3 lo. 61 c.
G. L. Linsley, *Gen. Man. & Supt.* Burlington, Vt.
F. G. Brownell, *M. M. & P. A.* Burlington, Vt.
Burlington & Mo. Riv. R. R. (in Neb.) (*See C., B. & Q.*)
Burlington & North-West'n Ry. 3 g. 38 m. 3 lo. 85 c.
John T. Gerry, *Supt.* Burlington, Ia.
Burlington & Ohio River R. R.
Gen. Man. & Pur. Agt. Chicago, Ill.
J. K. Lape, *Supt. of Equip.* Chicago, Ill.

C

Camden & Atlantic R. R. 4-8½ g. 79 m. 16 lo. 264 c.
F. A. Lister, *Supt. & Pur. Agt.* Camden, N. J.
Rufus Hill, *M. M.* Camden, N. J.
Samuel Wills, *M. C. B.* Camden, N. J.
Canada Southern Ry. 4-8½ g. 403 m. 89 l. 3,367 c.
W. P. Taylor, *Gen. Man.* Buffalo, N. Y.
A. F. Howland, *Pur. Agt.* St. Thomas, Ont.
W. A. Short, *Gen. M. M.* St. Thomas, Ont.
Rob't Potts, *Gen. M. C. B.* St. Thomas, Ont.
Can. Div.: W. E. Carroll, *Supt.* St. Thomas, Ont.
Robert Potts, *M. C. B.* St. Thomas, Ont.
U. S. Div.: E. P. Murray, *Supt.* Toledo, O.
O. P. Dunbar, *M. M.* Grosse Isle, Mich.
Canadian Pacific R. R. 4-8½ g. 551 m. 26 lo. 473 c.
W. C. Van Horne, *Gen. Man.* Winnipeg, Man.
Eastern Div. 240 m. 16 lo. 276 cars.
Archer Baker, *Gen. Supt.* Montreal, Can.
Tho. Irwin, *Mech. Supt.* Brockville, Ont.
Western Div. 311 m. 10 lo. 207 cars.
A. B. Stickney, *Gen. Supt.* Winnipeg, Man.
T. W. Shaughnessy, *Pur. Agt.* Winnipeg, Man.
F. C. Butterfield, *M. M. & M. C. B.* Winnipeg, Man.
Cape F'r & Yadkin Val. R. R. 4-8½ g. 47 m. 3 lo. 31 c.
L. C. Jones, *Gen. Supt.* Fayetteville, N. C.
Isaac W. Clark, *M. M. & C. B.* Fayetteville, N. C.
Catasauqua & Fogelsville. 4-8½ g. 25 m. 6 lo. 577 c.
C. W. Chapman, *Supt. & P. A.* Catasauqua, Pa.
Thos. E. Evans, *M. M.* Catasauqua, Pa.
Chas. J. Holbach, *M. C. B.* Catasauqua, Pa.
Central and South-Western Railroads (Ga.).
5 g. 975 m. 127 lo. 1,858 cars.
W. G. Raoul, *V. P. and G. Man.* Savannah, Ga.
Wm. Rogers, *Gen. Supt.* Savannah, Ga.
Henry Yonge, *Pur. Agt.* Savannah, Ga.
Cen. Div.: D. D. Arden, *M. M.* Savannah, Ga.
John McCann, *M. M.* Augusta, Ga.
R. M. Barthlemess, *M. C. B.* Savannah, Ga.
So.-West'n Div.: W. F. Shellman, *Supt.* Macon, Ga.
D. M. Gugel, *M. M.* Macon, Ga.
James A. Knight, *M. C. B.* Macon, Ga.
Central R. R. of N. J. 4-8½ g. 544 m. 294 lo. 27,108 c.
Gen. Man. New York, N. Y.
B. W. Burnett, *Pur. Agt.* New York, N. Y.
W. W. Stearns, *Gen. Supt.* Elizabeth, N. J.
Cen Div.: Wm. Woodcock, *M. M.* Elizabeth, N. J.
Geo. Hackett, *M. C. B.* Elizabeth, N. J.
C. G. Williams, *M. M.* Jersey City, N. J.
John Alpaugh, *M. M.* Phillipsburg, N. J.
Long Br. Div.: J. F. Randolph, *Supt.* Elizabeth, N. J.
N. J. So. Div.: R. Blodgett, *Supt.* Manchester, N. J.
Wm. Montgomery, *M. M.* Manchester, N. J.
Chas. N. Sawyer, *M. C. B.* Manchester, N. J.
Lehigh & Susquehanna Div.:
W. S. Polhemus, *A. G. Supt.* Mauch Chunk, Pa.
L. C. Brastow, *M. M. & C. B.* Ashley, Pa.
Central R. R. of S. C. (*See Wil. & Wel.*)
Central Iowa Ry. 4-8½ g. 244 m. 37 lo. 1,487 cars.
D. N. Pickering, *Gen. Supt.* Marshalltown, Ia.
John Player, *M. M.* Marshalltown, Ia.
T. L. Seevers, *M. C. B.* Marshalltown, Ia.
Central Pac. R. R. 4-8½ g. 2,777 m. 372 lo. 8,619 c.
A. N. Towne, *Gen. Man.* San Francisco, Cal.
J. A. Fillmore, *Gen. Supt.* San Francisco, Cal.
R. H. Pratt, *A. G. Supt.* San Francisco, Cal.
J. R. Watson, *Gen. Pur. Agt.* Sacramento, Cal.
A. J. Stevens, *Gen. M. M.* Sacramento, Cal.
Benj. Welch, *Gen. M. C. B.* Sacramento, Cal.
G. J. Turner, *M. C. B.* Sacramento, Cal.
West'n; Visalia Tulare Divs. and North'n R. R.:
A. D. Wilder, *Supt.* W. Oakland, Cal.
G. D. Welch, *M. M.* (W. Div.) W. Oakland, Cal.
W. D. Ludlow, *M. C. B.* (W. Div.) do.
S. J. Johnson, *M. M.* (T. Div.) Tulare, Cal.
D. Rutherford, *M. M.* (N. Rd.) S. Vallejo, Cal.
Sacramento; Oregon Divs.; and Cal. Pac. R. R.
J. B. Wright, *Supt.* Sacramento, Cal.
M. W. Cooley, *M. M.* Sacramento, Cal.
Phil. Douglas, *For. Car Sh.* Sacramento, Cal.
Truckee Div.: Frank Free, *Supt.* Wadsworth, Nev.
Geo. Gregg, *M. M.* Wadsworth, Nev.
Wm. McPherson, *F. Car Sh.* Wadsworth, Nev.
Humb't Div.: G. W. Coddington, *Supt.* Carlin, Nev.
W. F. Smith, *M. M.* Carlin, Nev.
J. C. Doughty, *For. Car Sh.* Carlin, Nev.
Salt Lake Div.: A. G. Fell, *Supt.* Ogden, Utah.
James Lamb, *M. M.* Terrace, Utah.
A. Sherburne, *For. Car Sh.* Ogden, Utah.
Los Angeles; and Yuma Divs. (So. Pac.):
E. E. Hewitt, *Asst. Supt.* Los Angeles, Cal.
James Velsir, *M. M.* Los Angeles, Cal.
J. S. Young, *For. Car Sh.* Los Angeles, Cal.
Arizona Div. (So. Pac.):
A. A. Bean, *Asst. Supt.* Tucson, Ariz.
Rio Grande and El Paso Divs. (So. Pac.):
J. Campbell, *Ass't Supt.* El Paso, Texas.
H. C. Standish, *For. Sh.* El Paso, Texas.
Central Vermont R. R. 4-8½ g. 548 m. 132 lo. 2,522 c.
J. W. Hobart, *Gen. Supt.* St. Albans, Vt.
J. M. Foss, *Asst. Gen. Supt. & M. M.* St. Albans, Vt.
No. Div.: I. B. Futvoye, *Supt.* St. Johns, P. Q.
Rut. Div.: J. Burdett, *Supt.* Rutland, Vt.
N. L. Davis, *M. M. & C. B.* Rutland, Vt.
New London & No'n R. R. 143 m. 22 lo. 308 c.
G. W. Bentley, *G. Supt. & P. A.* New London, Ct.
I. W. Dow, *M. M.* New London, Ct.
S. O. Banks, *M. C. B.* New London, Ct.
Charleston & Savannah Ry. 5 g. 115 m. 17 lo. 98 c.
H. S. Haines, *Gen. Man.* Savannah, Ga.
C. S. Gadsden, *Gen. Supt.* Charleston, S. C.
H. A. Ulmo, *M. M.* Savannah, Ga.
J. D. Murphy, *M. C. B.* Savannah, Ga.
Charlotte, Columbia & Augusta R. R. (*See Rich. & D.*)
Chateaugay R. R. 3 g. 34 m. 6 lo. 125 cars.
A. L. Inman, *Gen. Man.* Plattsburg, N. Y.
J. M. Davis, *Supt. & M. M.* Plattsburg, N. Y.
Chattaroi Ry. 4-8½ g. 43 miles 11 loco. 483 cars.
C. H. Rockwell, *Gen. Man. & P. A.* Ashland, Ky.
J. R. Martin, *M. M.* Ashland, Ky.
Joseph Burley, *M. C. B.* Ashland, Ky.
Cheraw & Chester R. R. 3 g. 30 m. 3 lo. 38 cars.
W. H. Harding, *Pres. & Supt.* Chester, S. C.
A. M. Manning, *M. M.* Chester, S. C.
Cheraw & Darlington R. R. (*See Wil. & Wel.*)
Cheraw & Salisbury R. R. (*See Wil. & Wel.*)
Cherokee R. R. 3 g. 37 m. 5 lo. 50 cars.
John Postel, *Manager* Atlanta, Ga.
C. E. Scruten, *M. M. & C. B.* Cedartown, Ga.
Chesapeake, Ohio & So.-W'n. 5 g. 365 m. 8 lo. 102 c.
R. Meek, *G. S. & Pur. Agt.* Elizabethtown, Ky.
W. D. Robb, *S. M. P. & M.* do.
C. A. Simon, *M. M. & C. B.* Paducah, Ky.
Chesapeake & Ohio Ry. 4-8½ g. 642 m. 133 l. 3,543 c.
C. W. Smith, *Gen. Man.* Richmond, Va.
A. H. Wood, *Asst. to Gen. Man.* do.
A. S. Emmons, *Pur. Agt.* Richmond, Va.
John McFarland, *Supt. M. P.* Richmond, Va.
Eastern Div.: E. T. Smith, *Supt.* Richmond, Va.
J. N. King, *M. C. B.* Richmond, Va.
Hunt. Div.: W. P. Harris, *Supt.*; and
T. L. Chapman, *Asst. Supt. M. P.*, and
H. C. Bassinger, *M. C. B.* Huntington, W. Va.
Lex. Div.: J. D. Yarrington, *Supt.* Lexington, Ky.
Cheshire R. R. 4-8½ g. 80 m. 30 lo. 499 cars.
R. Stewart, *Gen. Man.* Keene, N. H.
H. H. Stone, *Pur. Agt.* Keene, N. H.
F. A. Perry, *M. M.* Keene, N. H.
A. E. Howard, *G. For. Car Sh.* Keene, N. H.
Chester & Lenoir Ry. 3 g. 50 m. 3 lo. 23 cars.
James Mason, *Supt.* Yorkville, S. C.
T. P. Beard, *M. M.* Yorkville, S. C.
Chicago, B. & Kan. City Ry. 4-8½ g. 181 m. 9 lo. 130 c.
Robt. Law, *Gen. Supt.* Keokuk, Ia.
W. H. Bartlett, *Act. M. M.* Burlington, Ia.
A. B. Allen, *M. C. B.* Farmington, Ia.
Chicago, Burlington & Quincy R. R.
4-8½ g. 2,924 m. 441 lo. 16,499 cars.
T. J. Potter, *Gen. Man.* Chicago, Ill.
Supt. Lo. & Car Dept. Chicago, Ill.
Wm. Forsyth, *Mech. Eng.* Aurora, Ill.
(1) C., B. & Q., East of Mo. Riv. 1,938 miles.
H. B. Stone, *Gen. Supt.* Chicago, Ill.
Geo. B. Harris, *Pur. Agt.* Chicago, Ill.
Ill. Divs.: J. D. Besler, *Supt.* Galesburg, Ill.
Chi. Div.: Geo. Alexander, *Supt.* Aurora, Ill.
L. E. Johnson, *M. M.* Aurora, Ill.
Galesburg Div.: F. C. Rice, *Supt.* Galesburg, Ill.
Robert Colville, *M. M.* Galesburg, Ill.
St. L. Div.: S. E. Crance, *Supt.* St. Louis, Mo.
A. Forsyth, *M. M.* Beardstown, Ill.
Ia. & Mo. Divs.: K. H. Wade, *Supt.* Burlington, Ia.
East. Div.: C. M. Levy, *Supt.* Burlington, Ia.
Joel West, *M. M.* Burlington, Ia.
Mid. Div.: J. B. Maxon, *Supt.* Ottumwa, Ia.
West'n Div.: W. T. Ryder, *Supt.* Creston, Ia.
C. W. Eckerson, *M. M.* Creston, Ia.
(2) C., B. & Q., West of Mo. Riv. 935 miles.
G. W. Holdredge, *Gen. Supt.* Omaha, Neb.
Jas. M. Barr, *Pur. Agt.* Omaha, Neb.
D. Hawksworth, *Gen. M. M.* Plattsmouth, Neb.
Bur. & Mo. Riv. & Neb. Ry. Divs.:
E. D. Thompson, *Sup.* Lincoln, Neb.
E. Bignal, *M. M.* Lincoln, Neb.
R. V. Div.: A. Campbell, *Supt.* Hastings, Neb.
A. & N. Div.: J. McConniff, *Supt.* Lincoln, Neb.
Chicago, Milwaukee & St. Paul R. R.
4-8½ g. 3,951 m. 425 lo. 13,659 cars.
S. S. Merrill, *Gen. Man.* Milwaukee, Wis.
J. T. Clarke, *Gen. Supt.* Milwaukee, Wis.
J. T. Crocker, *Pur. Agt.* Milwaukee, Wis.
J. M. Lowry, *Gen. M. M.* Milwaukee, Wis.
H. Watkeys, *M. M.* W. Milwaukee, Wis.
John Bailie, *Supt. Car Dept.* Milwaukee, Wis.
La Crosse: H. C. Atkins, *Supt.* Milwaukee, Wis.
Chi. & C. Bluff Div.: S. J. Collins Chicago, Ill.
P. du C. & M. Pt. Div.:
R. B. Campbell Milwaukee, Ill.
Northern Div.: L. B. Rock, *Supt.* Milwaukee, Wis.
Wm. E. Kittredge, *M. C. B.* Milwaukee, Wis.
So.-Wn Divs.: D. A. Olin, *Supt.* Racine, Wis.
John Taylor, *M. M.* Racine, Wis.
E. A. Eddy, *M. C. B.* Racine, Wis.
Lines West of Mississippi River:
C. H. Prior, *A. Gen. Supt.* Minneapolis, Minn.
H. & D. Div.: C. W. Case, *Supt.* Minneapolis, Minn.
J. O. Pattie, *M. M.* Minneapolis, Minn.
Ia. & Minn. Div.: H. R. Williams, *Supt.* do.
So. M. Div.: F. D. Underwood, *Supt.* La Crosse, Wis.
Ia. & Da. Div.: G. W. Sanborn, *Supt.* Mason City, Ia.
S. Cy. & Da. Div.: J. Jackson, *Supt.* Sioux City, Ia.
F. H. Moulton, *M. M.* Yankton, Dak.
M. Pt. Div.: G. W. Cobb, *Supt.* Mineral Pt., Wis.
Dubuque Div.: J. H. Jenkins, *Supt.* Dubuque, Ia.
S. Charnley, *M. M.* Dubuque, Ia.
Chicago, Pekin & So.-Wn. R. R. 4-8½ g. 88 m. 8 lo. 455 c.
A. H. Crocker, *Rec.* Joliet, Ill.
A. H. Cook, *Pur. Agt.* Chicago, Ill.
A. R. Overton, *M. M.* Joliet, Ill.
F. Shields, *M. C. B.* Streator, Ill.
Chicago, Rock Island & Pac. Ry.
4-8½ g. 1,381 m. 290 lo. 17,799 cars.
R. R. Cable, *V. P. & Gen. Man.* Chicago, Ill.
A. Kimball, *Gen. Supt.* Davenport, Ia.
F. A. Marsh, *Pur. Agt.* Chicago, Ill.
T. B. Twombly, *Gen. M. M.* Chicago, Ill.
B. K. Verbryck, *Gen. M. C. B.* Chicago, Ill.
Ill. Div.: R. H. Chamberlin, *Supt.* Chicago, Ill.
R. Biester, *M. M.* Chicago, Ill.
Sam'l Pullman, *M. C. B.* Chicago, Ill.
Ia. Div.: H. F. Royce, *Supt.* Des Moines, Ia.
J. G. Crockett, *M. M.* Stuart, Ia.
Jas. E. Morrill, *M. M.* Davenport, Ia.
Chas. M. Leonard, *M. C. B.* Davenport, Ia.
So.-Wn. Div.: G. F. Walker, *Supt.* Trenton, Ia.
R. A. Carscadin, *M. M.* Trenton, Ia.
Chas. R. Best, *M. C. B.* Trenton, Ia.
K. & Des. M. Div.: Jno. Given, *Supt.* Keokuk, Ia.
S. W. Wakefield, *M. M.* Keokuk, Ia.
Henry Kummer, *M. C. B.* Keokuk, Ia.
Chi., Saginaw & Can. R. R. 4-8½ g. 38 m. 4 lo. 16 c.
J. A. Elwell, *Gen. Man. & Pur. Agt.* St. Louis, Mich.
Jas. T. Hall, *Supt.* St. Louis, Mich.
Chicago, St. Louis & New Orleans R. R.
4-8½ g. 571 m. 101 lo. 1,913 cars.
J. C. Clarke, *V. P. & G. Man.* New Orleans, La.
L. T. Brien, *Asst. Gen. Man.* New Orleans, La.
C. M. Sheafe, *Gen. Supt.* New Orleans, La.
H. B. Febiger, *Pur. Agt.* New Orleans, La.
W. H. Purdy, *Supt. Mach.* McComb City, Miss.
Geo. W. Baxter, *M. C. B.* McComb City, Miss.
So. Div.: E. D. Anderson, *Acting Supt.* do.
W. P. McKinley, *M. M.* McComb City, Miss.
No. Div.: J. G. Mann, *Supt.* Jackson, Tenn.
J. M. Keith, *M. M.* Jackson, Tenn.
J. F. White, *M. M.* Water Valley, Miss.
Chicago, St. Paul, Minneapolis & Omaha Ry.
4-8½ g. 1,037 m. 131 lo. 4,088 cars.
C. F. Hatch, *Gen. Supt.* St. Paul, Minn.
W. H. S. Wright, *Pur. Agt.* St. Paul, Minn.
Matt. Ellis, *M. M.* St. Paul, Minn.
W. B. Rice, *M. C. B.* St. Paul, Minn.
Ea. & No. Div.: T. P. Gere, *Supt.* St. Paul, Minn.
St. Paul Div.: J. F. Lincoln, *Supt.* St. Paul, Minn.
Sioux City Div.: H. Spencer, *Supt.* Sioux City, Ia.
F. W. Heintselman, *Gen. For. Sh.* Sioux Cy, Ia.
Neb. Div.: G. V. Morford, *Supt.* Omaha, Neb.
Chicago, Texas & Mexican Central Ry.
4-8½ g. 52 m. 4 lo. 60 cars.
Gen. Supt. Dallas, Tex.
Chas. Howard, *Pur. Agt.* Chicago, Ill.
Chicago & Alton R. R. 4-8½ g. 840 m. 213 lo. 6,148 c.
J. C. McMullin, *Gen. Man.* Chicago, Ill.
W. F. Merrill, *Gen. Supt.* do.
A. V. Hartwell, *Pur. Agt.* Chicago, Ill.
Wm. Wilson, *Supt. of Mach.* Bloomington, Ill.
Jos. Townsend, *G. For. Car Dept.* do.
Chi. Div.: A. M. Richards, *Supt.* Bloomington, Ill.
St. Louis Div.: T. M. Eates, *Supt.* Roodhouse, Ill.
Kan. Cy. Div.: O. Vaughan, *Supt.* Slater, Mo.
Wm. McPhail, *M. M.* Slater, Mo.
Chi. & East'n Ill. 4-8½ g. 248 m. 56 lo. 3,000 cars.
O. S. Lyford, *Gen. Supt.* Chicago, Ill.
D. R. Patterson, *Pur. Agt.* Chicago, Ill.
P. W. Drew, *M. Trans.* Chicago, Ill.
Allen Cook, *M. M.* Danville, Ill.
Jas. T. Kerney, *M. C. B.* Danville, Ill.
Chicago & Grand Trunk Ry. (*See Grand Trunk.*)
Chicago & Iowa R. R. 4-8½ g. 104 m. 15 lo. 237 cars.
T. J. Potter, *Gen. Man.* Chicago, Ill.
W. H. Holcomb, *Rec.* Rochelle, Ill.
H. S. Bryan, *M. M.* Aurora, Ill.
Chicago & Northwestern Ry.
4-8½ g. 3,281 m. 558 lo. 18,650 cars.
Marvin Hughitt, *2d V. Pres. & G. M.* Chicago, Ill.
J. D. Layng, *Gen. Supt.* Chicago, Ill.
W. G. Brownson, *Asst. Supt.* Boone, Ia.
R. W. Hamer, *Pur. Agt.* Chicago, Ill.
Geo. W. Tilton, *Supt. M. P. & M.*; and
J. M. Boon, *A. Supt. M. P. & M.* Chicago, Ill.
Wis. and Mil. Divs. & Sheboygan & W'n Ry.:
Chas. D. Gorham, *Supt.* Chicago, Ill.
Gal. Div.: Chas. Murray, *Supt.* Chicago, Ill.
Pen'r Div.: W. B. Linsley, *Supt.* Escanaba, Mich.
Geo. H. White, *M. M.* Escanaba, Mich.
Mad. Div.: C. A. Swineford, *Supt.* Baraboo, Wis.
Win. & St. P. Div.: S. Sanborn, *Supt.* Winona, Minn.
W. A. Scott, *M. M.* Winona, Minn.
Dak. Cen. Ry.: T. J. Nicholl, *Supt.* Huron, Dak.
Mil. & Mad. Ry.: J. B. Trull, *Supt.* Galena, Ill.
Ia. Div.: J. M. Whitman, *Supt.* Clinton, Ia.
Geo. W. Lowe, *M. M. & M. C. B.* Clinton, Ia.
No. Ia. Div.: H. G. Burt, *Supt.* Eagle Grove, Ia.
Chicago & West Michigan:
4-8½ g. 366 m. 43 lo. 1,345 cars.
Geo. C. Kimball, *V. P. & G. Man.* Muskegon, Mich.
C. Harris, *Gen. Supt.* " "
H. Park, *Pur. Agt.* " "
W. F. N. Davis, *M. M.* " "
Cincinnati, Columbus & Hocking Val. Ry.
4-9 g. 25 m. 1 lo. 27 cars.
J. E. Gimperling, *Gen. Man.* Dayton, O.
Geo. F. Robinson, *Supt.* Washington, O.
Cin., Georgetown & Portsmouth. 3 g. 35 m. 2 lo. 39 c.
A. T. Roever, *Gen. Man.* Cincinnati, O.
J. C. Homer, *M. M.* Cincinnati, O.
Cincinnati, Green Riv. & Nashville R. R. 3 g.
A. C. Sim, *Supt.* King's Mountain, Ky.
G. Brashears, *Pur. Agt.* Cincinnati, O.
Cincinnati, Hamilton & Dayton R. R.
Albert Griggs, *Supt.* Cincinnati, O.
John Black, *Gen. M. M.* Lima, O.
W. H. H. Allison, *M. C. B.* Cincinnati, O.
Cincinnati, Indianapolis, St. Louis & Chicago Ry.
4-8½ g. 345 m. 60 lo. 1,930 cars.
J. W. Sherwood, *Supt.* Indianapolis, Ind.
Geo. Tozzer, *Pur. Agt.* Cincinnati, O.
J. S. Patterson, *M. of Mach. & M. C. B.* Cincinn., O.
Cincinnati, New Orleans & Texas Pacific Ry. Co.
5 g. 841 m. 123 lo. 2,687 cars.
John Scott, *V. Pres. & Gen. Man.* Cincinnati, O.
James Meehan, *Gen. M. M.* Cincinnati, O.
Cin. So. Div.: R. Carroll, *Gen. Supt.* Cin., O.
Julius Uihlein, *Pur. Agt.* Cincinnati, O.
J. W. Fowle, *M. M.* Cincinnati, O.
John Richardson, *M. C. B.* Cincinnati, O.
A. Thomson, *M. M.* Chattanooga, Tenn.
Ala. Gr. S'n Div.: C. B. Wallace, *Gen. Supt.*, and
R. W. Healey, *Pur. Agt.* Cincinnati, O.
George Manuell, *M. M.* Chattanooga, Tenn.
Fred Morgan, *M. C. B.* Chattanooga, Tenn.
V. & M. Div.: E. F. Raworth, *G. S.* Vicksburg, Miss.
James B. Browne, *M. M.* Vicksburg, Miss.
V. S. & P. Div.: F. Y. Dabney, *Supt.* Monroe, La.
W. Bell Smith, *M. M. & C. B.* Monroe, La.
Cincinnati Northern Ry. 3 g. 30 m. 4 lo. 60 c.
G. L. Barringer, *Gen. Man.* Cincinnati, O.
C. W. Bradley, *Pur. Agt.* Cincinnati, O.
T. J. Hamer, *M. M. & C. B.* Cincinnati, O.
Cincinnati, Selma & Mobile R. R. 5 g. 45 m. 2 lo. 39 c.
D. McLaren, *Supt.* Selma, Ala.
Simon Hertz, *Pur. Agt.* Selma, Ala.
J. M. Levis, *M. M.* Marion, Ga.
Cincinnati Southern Ry. (*See Cin., N. O. & Tex. Pac.*)
Cin., Wabash & Mich. Ry. 4-8½ g. 110 m. 8 lo. 139 c.
Norman Beckley, *Gen. Man. & P. A.* Elkhart, Ind.
O. W. Lamport, *Supt.* Wabash, Ind.
S. B. Tinker, *M. M. & M. C. B.* Wabash, Ind.
Cincinnati & Eastern Ry. 3 g. 76 m. 4 lo. 66 cars.
P. W. Naughton, *M. M.* Cincinnati, O.
Clarksburg, Weston & Glenville R. R.
3 g. 26 m. 2 lo. 21 cars.
A. H. Kunst, *Supt.* Weston, W. Va.
Sam. A. Steel, *M. M.* Weston, W. Va.
F. Dillie, *M. C. B.* Nottingham, O.
Cleve., Akron & Col. R. R. 4-9 g. 144 m. 14 lo. 638 c.
N. Monsarrat, *Gen. Supt.* Akron, O.
M. M. & C. B. Akron, O.
Cleve., Col., Cin. & Ind. Ry:
4-8½ g. 812 m. 246 lo. 7,082 cars.
J. H. Devereux, *Pres.* Cleveland, O.
E. B. Thomas, *Gen. Man.* Cleveland, O.
J. L. Yale, *Pur. Agt.* Cleveland, O.
W. F. Turreff, *Gen. M. M.* Cleveland, O.
(1) Cl., Col., Cin. & Ind. Divs. 471 m. 162 lo. 4,768 c.
Col. & Cin. Div.: Robt. Blee, *Supt.* Cleveland, O.
W. L. Gilmore, *M. M.* Cleveland, O.
A. G. Steinbrenner, *G. For. Car Dept.* do.
Ind'p'lis Div.: C. C. Gale, *Supt.* Indianapolis, Ind.
J. K. Lape, *M. M.* Brightwood, Ind.
N. Mark, *G. For. Car Dept.* Brightwood, Ind.
Day. & Union: H. S. Gordon, *M. M.* Dayton, O.
C. R. & C. Div.: W. S. Brewer, *M. M.* Richm'd, Ind.
D. & M. Rd.: J. H. Barrett, *Supt.* Toledo, O.
Jno. Black, *M. M.* Lima, Ohio.
Cleveland & Pittsburg R. R. (*See Penna. Co.*)
Cleveland, Tuscarawas Valley & Wheeling Ry.
4-8½ g. 158 m. 23 lo. 1,522 cars.
Oscar Townsend, *Gen. Man.* Cleveland, O.
Wm. Thornburg, *Supt.* Cleveland, O.
W. A. Stone, *M. M.* Lorain, O.
Cleve. & Marietta R. R. 4-8½ g. 99 m. 9 lo. 157 cars.
S. C. Baldwin, *Gen. Man.* Marietta, O.
M. D. Woodford, *Gen. Supt.* Marietta, O.
R. B. Hoover, *Pur. Agt.* Marietta, O.
Lewis James, *M. M.* Toledo, O.
Coburg, Peterborough & Marmora Ry.
5-6 g. 47 m. 5 lo. 207 cars.
Jas. R. Barber, *Gen. Supt.* Cobourg, Ont.
Jas. Clark, *M. M.* Cobourg, Ont.
John Tinney, *M. C. B.* Cobourg, Ont.
Columbia & Greenville R. R. (*See Rich. & Dan.*)
Columbus, Hocking Valley & Toledo Ry.
4-9 g. 319 m. 76 lo. 6,000 cars.
Orland Smith, *Gen. Man.* Columbus, O.
G. R. Carr, *Gen. Supt. & Pur. Agt.* Columbus, O.
J. G. Hutchins, *M. M.* Columbus, O.
J. M. Rockafield, *M. C. B.* Columbus, O.
Tol. Div.: M. T. Seymour, *Supt.* Columbus, O.
Hock. V. Div.: M. P. L. Booth, *Supt.* Columbus, O.
Ohio Riv. Div.: C. D. Norris, *Supt.* Logan, O.
Columbus & Maysville Ry. (*See Cin. & East.*)
Columbus & Rome R. R. 3 g. 32 m. 2 lo. 25 cars.
M. E. Gray, *Supt.* Columbus, O.
Columbus & Western Ry. 5 g. 80 m. 2 lo. 19 cars.
E. A. Llewellen, *Gen. Man.* Columbus, Ga.
R. A. Bridges, *M. M.* Opelika, Ala.
Concord & Claremont R. R. (*See Northern of N. H.*)
Conn. Riv. and Ver. Val. R. Rs. 4-8½ g. 130 m. 33 lo. 456 c.
J. Mulligan, *Supt. & Pur. Agt.* Springfield, Mass.
W. H. Stearns, *M. M.* Springfield, Mass.
Robert Hitchcock, *M. C. B.* Springfield, Mass.
Connotton Valley R. R. 3 g. 109 m. 10 lo. 531 cars.
Samuel Briggs, *Gen. Man.* Canton, O.
A. B. Proal, *Pur. Agt.* Canton, O.
B. C. Bosworth, *M. M.* Canton, O.
Cornwall R. R. 4-8½ g. 9 m. 5 lo. 166 cars.
Frank Donahue, *G. Supt. & M. M.* Lebanon, Pa.
Levi Blonch, *M. C. B.* Lebanon, Pa.
Credit Valley Ry. 4-8½ g. 184 m. 22 lo. 484 cars.
James Ross, *Gen. Supt.* Toronto, Ont.
John Macnab, *Pur. Agt.* Toronto, Can.
H. G. Taylor, *Mech. Supt.* Toronto, Can.

Crown Point Iron Co. R. R. 3 g. 13 m.
A. L. Inman, *Gen. Man*.....Plattsburg, N. Y.
J. M Davies, *Supt. & M. M*..Crown Point, N. Y.
J. C. Sherman, *M. C. B*.....Crown Point, N. Y.
Cumberland & Pennsylvania R. R. 4-8½ g. 55 m.
P. L. Burwell, *Gen Supt & P A*.Cumberland, Md.
N. W. Howson, *Mast. of Mach*.Mt. Savage, Md.
Nathan Binix, *M. C. B*.....Mt. Savage, Md.
Cumberland Valley R. R. 4-9 g. 125 m. 21 lo. 280 cars.
J. F. Boyd, *Supt*.....Chambersburg, Pa.
A. S. Hull, *M. M*.....Cnambersburg, Pa.
C. Wickey, *F. C. R*.....Chambersburg, Pa.

D

Danbury & Norwalk R. R. 4-8½ g. 33 m. 6 lo. 100 c.
L. W. Sandiforth, *G. Supt. & P. A*..S. Norwalk, Ct.
N. M. George, *M. M. & C. B*....Danbury, Conn.
Danville, Mocksville & So.-Wn. R. R. 3 g. 28 m.
H. W. Goodrich, *Ch. Eng*.....Leakesvil'e, N. C.
Danville, Olney & O. R. R.R. 4-8½ g. 110 m. 4 lo. 83 c.
Jas. R. Maxwell, *G. Man. & P. A*.Boston, Mass.
J. M. Graham, *Supt*.....Kansas, Ill.
Louis Parisoe, *M. M & C. B*.....Kansas, Ill.
Dayton & Union R. R. (*See Ohio Ry.*)
Delaware, Lackawanna & Western R. R.
4-8½ g. 670 m. 348 lo. 26,187 cars.
Wm. F. Halstead, *Gen. Supt*.....Scranton, Pa.
G. W. B. Cushing, *Pur. Agt*..New York, N. Y.
Walter Dawson, *Mast. of Mach*...Scranton, Pa.
Robt. McKenna, *M. C. B*.....Scranton, Pa.
Bloomsb'g Div.: C. Graham, *M. M*..Kingston, Pa.
Utica Div.: A. C. Salisbury, *Supt*....Utica, N. Y.
Thos. Thatcher, *M. M*.....Utica, N. Y.
Morris & Essex Div. and Sussex R. R.:
A. Reasoner, *Supt*.....Hoboken, N. J.
W. H. Lewis, *M. M*.....Kingsland, N. J.
J. W. Baker, *Mast. Car Rep*.....Dover, N. J.
Oswego & Syracuse Div.:
W. B. Phelps, *Supt*.....Oswego, N. Y.
Jas. Buchanan, *M. M*.....Syracuse, . Y.
Syracuse, Binghamton & New York R. R.
4-8½ g. 81 m. 20 lo. 598 cars.
W. K. Niver, *Gen. Supt*.....Syracuse, N. Y.
Jas. Buchanan, *M. M*.....Syracuse, N. Y.
Delaware Western R. R. 4-8½ g. 20 m. 4 lo. 30 cars.
David Connell, *Supt*.....Wilmington, Del.
Delaware & Chesapeake R. R. 4-8½ g. 54 m. 3 lo. 16 c.
O. S. Sanford, *Supt*.....Oxford, Md.
Joseph A. Baynard, *M. M*.....Oxford, Md.
Chas. E. Mason, *M. C. B*.....Oxford, Md.
Delaware & Hudson Canal Co.
4-3 and 4-8½ g. 596 m. 151 lo. 9,248 cars.
C. F. Young, *Gen. Man*.....Honesdale, Pa.
C. F. Young, *Pur. Agt*.....Albany, N. Y.
R. C. Blackall, *Supt. of Mach*.....Albany N. Y.
Susq. Div.: C. D. Hammond, *Supt*. Albany, N. Y.
C. A. Jones, *M. M*.....Oneonta, N. Y.
J. R. Skinner, *M. C. B*.....Oneonta, N. Y.
Sar. & Ch. Divs.: T. Voorhees, *Supt*...Troy, N. Y.
J. L. Corey, *M. M*.....Green Island, N. Y.
Chr. Körner, *M. C. B*.....Green Island, N. Y.
Pa. Div.: R. Manville, *Supt & Pur Agt*. and
S. H. Dotterer, *M. M*.....Carbondale, Pa.
T. Orchard, *M. C. B*.....Carbondale, Pa.
Denver & New Orleans. 4-8½ g. 140 m. 11 lo. 400 c.
S. W. Eccles, *Gen. Sup*.....Denver, Col.
Chas. Wheeler, *Pur. Agt*.....Lenver, Col.
S. P. Weller, *M. M. & M. C. B*.....Denver, Col.
Denver & Rio Grande Ry. 3 g. 1,062 m. 170 lo. 4,617 c
D. C. Dodge, *Gen. Man*.....Denver, Col.
Henry Wood, *Gen. Supt*..Salt Lake City, Utah.
Geo. W. Ristine, *Asst. Gen. Man*...Denver, Col.
A. B. Garner, *Pur. Agt*.....Denver, Col.
N. W. Sample, *M. M*.....Denver, Col.
M. C. B.....Burnham, Col
1st Div.: W. H. Bancroft, *Supt*....S. Pueblo, Col.
2d Div.: R. M. Ridgway, *Supt*.....Alamosa, Col.
3d Div.: Cole Lydon, *Supt*.....Leadville, Col.
4th Div.: J. A. Myers, *Supt*.....Salida, Col.
Des Moines & Ft. Dodge. 4-8½ g. 87 m. 11 lo. 158 c.
C. N. Gilmore, *Supt*.....Des Moines, Ia.
John McGrayel, *M. M*.....Grand Junction, Ia.
E. A. Avery, *M. C. B*.....Grand Junction, Ia.
Det., Gr. H. & Mil. Ry. 4-8½ g. 189 m. 36 lo. 478 c.
G. R. Nash, *Gen. Man*.....Detroit, Mich.
John S. Lorimer, *Storekeeper*....Detroit, Mich.
W. J. Morgan, *Supt*.....Detroit, Mich.
F. Parker, *Mech. Supt*.....Detroit, Mich.
Det., Lansing & No'n R. R. 4-8½ g. 222 m. 84 lo. 1027 c
John B. Mulliken, *Gen. Man*.....Detroit, Mich.
Allan Bourn, *Pur. Agt*.....Detroit, Mich.
Thos. M. Fish, *Gen. Supt*.....Ionia, Mich.
G. C. Watrous, *M. M. & C. B*.....Ionia, Mich.
Det., Mack. & Marq. R. R. 4-8½ g. 151 m. 8 lo. 227 c.
D. McCool, *Gen. Supt*.....Marquette, Mich.
E. W. Allen, *Pur. Agt*.....Marquette, Mich.
John Wilson, *Mech. Supt*.....Marquette, Mich.
Dorchester & Delaware R. R. 4-8½ g. 33 m.
Thos. E. Wright, *Supt*.....Cambridge, Md.
Dubuque & Dakota R. R. 4-8½ g. 64 m. 2 lo. 54 cars.
A. C. Goodrich, *Supt*.....Waverly, Ia.
W. S. Couch, *Pur. Agt*.....Dubuque, Ia.
Duck River Valley R. R. 3 g. 34 m.
Geo. Childress, *Supt*.....Columbia, Tenn.
Dunkirk, Allegheny Valley & Pittsburgh R. R.
4-8½ g. 91 m. 14 lo. 102 cars.
D. Thayer, *Gen. Supt*.....Dunkirk, N. Y.
R. C. Moore, *Pur. Agt*.....New York, N. Y.
J. C. Haggett *M. M. & C. B*.....Dunkirk, N. Y.

E

East Broad Top R. R. 3 g. 30 m. 6 lo. 191 cars.
A. W. Sims, *Supt*.....Orbisonia, Pa.
A. B. Greenwood, *M. M*.....Orbisonia, Pa.
East Tennessee, Virginia & Georgia R. R.
5 g. 1,185 m. 133 lo. 1,597 cars.
Henry Fink, *Gen. Man*.....Lynchburg, Va.
J. F. O'Brien, *Gen. Supt*.....Knoxville, Tenn.
Main Stem; Ohio; and No. Car. Divs.:
F. K. Huger, *Supt*.....Knoxville, Tenn.
B. J. Sitton, *M. M*.....Knoxville, Tenn.
Jos. Armbruster, *M. C. B*....Knoxville, Tenn.
Selma and Alabama Central Divs.:
John M. Bridges, *Supt*.....Selma, Ala.
Simon Gay, *M. M*.....Selma, Ala.
W. W. Pierce, *M. C. B*.....Selma, Ala.
Memphis & Charleston R. R. (Div.):
R. B. Pegram, Jr., *Supt*.....Memphis, Tenn.
H. N. Burford, *M. M*.....Memphis, Tenn.
M. C. B.....Memphis, Tenn.
Macon & Brunswick Div.:
J. F. Mallory, *Supt*.....Macon, Ga.
G. R. Wagnon, *M M*.....Macon, Ga
Georgia Division:
W. V. McCracken, *Supt*.....Atlanta, Ga.
Eastern R. R. 4-8½ g. 283 m. 99 lo. 2,268 cars.
D. W. Sanborn, *Mast. of Trans*..Boston, Mass.
Geo. J. Fisher, *Pur. Agt*.....Boston, Mass.
Amos Pillsbury, *S. M. P. & M*...E. Boston, Mass.
J. D. Billings, *M. C. B*.....Salem, Mass.
Con'y Div.: J. W. Sanborn, *Supt*..Wolfboro J., N. H.
Eastern Kentucky R. R. 4-8½ g. 34 m. 5 lo. 123 c.
H. W. Bates, *V. P. & Manager*...Greenup, Ky.
Geo. Gibbs, *Pur. Agt*.....Riverton, Ky.
D. S. Weaver, *M. M*.....Riverton, Ky.
Eastern Shore R. R. 4-8½ g. 38 m. 2 lo.
W. Thompson, *Supt*.....Princess Anne, Md.
F. Strattner, *M. M*.....Princess Anne, Md.
Elberton Air-Line R.R. (*See Rich. & Dan. N. G. Brs.*)
Elizabeth City & Norfolk R. R. 4-8½ g. 79 m. 5 lo. 96 c.
M. K. King, *Gen. Man. & Pur. Agt*.Norfolk, Va.
J. S. Whitworth, *M. M. & C. B*.....Norfolk, Va.
Erie & Pittsburgh R. R. (*See Penna. Co.*)
Eureka & Palisade R. R. 3 g. 97 m. 7 lo. 124 cars.
P. Everts, *Gen. Supt & Pur. Agt*..Eureka, Nev.
J. P. Rugg, *M. M*.....Palisade, Nev.
A. S. Longley, *M C. B*.....Palisade, Nev.
Europ. & No. Amer. Ry. 4-8½ g. 114 m. 15 lo. 557 c.
F. W. Cram, *Supt. & Pur. Agt*.....Bangor, Me.
A. O. Bailey, *M. M. & C. B*. Mattawamkeag, Me.
Evansville, Paducah & Cairo Line. 200 miles.
G. J. Grammer, *Supt*.....Evansville, Ind.
Evansville, Rockport & E'n Ry. 4-9 g. 71 m. 5 lo. 98 c.
H. L. Shepard, *Supt*.....Evansville, Ind.
Evansv. & Terre Haute. 4-8½ g. 114 m. 26 lo. 900 c.
C. J. Hepburn, *Gen. Supt*.....Evansville, Ind.
John Torrence, *Gen. For*.....Evansville, Ind.

F

Fitchburg R. R. 4-8½ g. 189 m. 100 lo. 3,315 cars.
John Adams, *Gen. Supt*.....Boston, Mass.
E. K. Turner, *Asst. Supt*.....Fitchburg, Mass.
F. S. Pratt, *Pur. Agt*.....Boston, Mass.
G. A. Coolidge, *Acting Supt. M. P. & M.*; and
J. W. Marden, *M. C. B*.....Charlestown, Mass
Flint & Pere Marq. 4-8½ g. 318 m. 52 lo. 1,556 cars.
H. C. Potter, *Gen. Man*.....E. Saginaw, Mich.
D. Edwards, *Asst. Gen. Man*..E. Saginaw, Mich.
G. G. Cook, *Pur. Agt*.....E. Saginaw, Mich.
Sanford Keeler, *Gen. Supt*..E. Saginaw, Mich.
W. F. Potter, *Supt.* (E. Div.)..E. Saginaw, Mich.
M. V. Meredith, *Supt.* (W. Div.)E. Saginaw, Mich.
T. J. Hatswell, *M. M*.....E. Saginaw, Mich.
R. McPherson, *M. C. B*.....E. Saginaw, Mich.
Florida Central & Western R. R.
5 g. 234 m. 16 lo. 160 cars.
Wm. M. Davidson, *Gen. Man*.Jacksonville, Fla.
Jas. S. McElroy, *Supt*.....Tallahassee, Fla.
Florida Southern Ry. 3 g. 50 m. 5 lo. 53 cars.
H. S. Ming, *Gen. Supt*.....Palatka, Fla.
F. A. Garrison, *Pur. Agt*.....Palatka, Fla.
J. W. Roberts, *M. M. & C. B*.....Palatka, Fla.
Florida Transit R. R. 5 g. 224 m.
D. E. Maxwell, *Gen. Supt*.....Fernandina, Fla.
John Hedges, *Pur. Agt*.....Fernandina, Fla.
R. V. Dahoney, *M. M*.....Fernandina, Fla.
G. Hernandez, *M. C. B*.....Fernandina, Fla.
Fonda, Johnst'n & Gloversv. 4-8½ g. 26 m. 5 lo 18 c.
Lawton Caten, *Supt*.....Gloversville, N. Y.
Fond du Lac, Amboy & Peoria. 3 g. 30 m. 2 lo. 35 c.
Alonzo Kinyon, *Supt. & P. A*.Fond du Lac, Wis.
Fort Dodge & Fort Ridley R. R. 4-8½ g.
G. R. Pearson, *Supt*.....Fort Dodge, Ia.
Ft. Madison & No.-West'n Ry. 3 g. 41 m. 4 lo. 120 c.
S. B. Kenrick, *Supt. & Pur. Agt*.Ft. Madison, Ia.
L. Lamb, *M. M. & C. B*.....Ft. Madison, Ia.
Ft. Wayne, Cin. & Louisv. 4-8½ g. 108 m. 9 lo. 249 c.
White Water R. R. 4-8½ g. 62 m. 5 lo. 170 cars.
W. W. Worthington, *Gen. Supt*.Ft. Wayne, Ind.
W. D. Morris, *M. M. & C. B*..Ft. Wayne, Ind.
C. W. Hollister *M. M. & C. B*...Jackson, Mich.
Fulton County N. G. Ry. 3 g. 47 m. 2 lo. 106 cars.
A. C. Atherton, *Gen. Supt. & P. Agt*.Lewiston, Ill.

G

Galveston, Harrisburg & San Antonio Ry.
4-8½ g. 492 m. 47 lo. 1870 cars.
Jas. Converse, *Gen. Supt*.....Houston, Tex.
Chas. Babbidge, *Pur. Agt*.....Boston, Mass.
D. T. Davis, *Supt. M. P. & M*..Harrisburg, Tex.
James Alexander, *M. C. B*..Harrisburg, Tex.
El Paso Div. (*See Cen. Pac.*) 4-8½ g. 144 miles.
Galveston, Houston & Henderson R. R.
4-8½ g. 50 m. 17 lo. 212 cars.
W. H. Harding, *G. Man. & P. Agt*. Galveston, Tex.
Allen McCoy, *Supt*.....Galveston, Tex.
J. G. Conlon, *M. M*.....Galveston, Tex.
Geneva, Ithaca & Sayre R. R. (*See Lehigh Val.*)
Georgia R. R. 5 g. 307 m. 42 lo. 938 cars.
John W. Green, *Gen. Man*.....Augusta, Ga.
John S. Cook, *M. M*.....Augusta, Ga.
T. M. Preval, *M. C. B*.....Augusta, Ga.
Georgia Pacific Ry. (Miss. Div.). 3 g. 43 m. 2 lo. 44 c.
C. M. Bolton, *Supt*.....Greenville, Miss.
W. M. Sutton, *Pur. Agt*.....Greenville, Miss.
Benj. Davis, *M. M*.....Greenville, Miss.
J. B. Shelton, *M. C. B*.....Greenville, Miss.
Grand Haven R. R. (*See Chic. & W. Mich.*)
Grand Junction R'y. (*See Midland of Can.*)
G'd Rap., Newaygo & L. S. R. R. (*See Chic. & W. M.*)
Grand Rapids & Indiana. 4-8½ g. 456 m. 46 lo. 1,566 c.
W. O. Hughart, *Gen. Man*.Grand Rapids, Mich.
W. R. Shelby, *Pur. Agt*....Grand Rapids, Mich.
S. D. Bradley, *M. M*.....Grand Rapids, Mich.
No'n Div.: J. M. Metheany, *Supt*.G'nd Rap., Mich.
So'n Div.: P. S. O'Rourke, *Supt*.Fort Wayne, Ind.
Grand Tower & Carbondale. 4-8½ g. 25 m. 6 lo. 357 c.
T. M. Williamson, *Supt. & P. A*..Gr. Tower, Ill.
Hugh Smith, *M. M. & C. B*....Grand Tower, Ill.
Grand Trunk Ry. 4-8½ g. 1,267 m. 434 lo. 9,403 c.
Joseph Hickson, *Gen. Man*.....Montreal, Can.
Wm. Wainright, *Asst. Gen. Man*.Montreal, Can.
Gr. Tr. Divs.: W. J. Spicer, *Supt*.Montreal, Can.
Jno. Taylor, *Gen. Storekeeper*.Montreal, Can.
Herbert Wallis, *Mech. Supt*...Montreal, Can.
Wm. McWood, *M. C. B*.....Montreal, Can.
F. R. F. Brown, *Asst. M. S*....Montreal, Can.
J. Davis Barnett, *Asst. M. S*..Stratford, Ont
Chi. & Gr. Trunk Ry. 4-8½ g. 330 m. 56 lo. 1,191 c.
S. R. Callaway, *Gen. Man*.....Chicago, Ill.
W. H. Pettibone, *Supt*..Battle Creek, Mich.
N. Wall, *Pur. Agt*.....Fort Gratiot, Mich.
H. Roberts, *Mech. Supt*....Port Huron, Mich.
Great West'n Div.: 4-8½ g. 823 m. 216 lo. 5,039 c.
Chas. Stiff, *Asst. Gen. Man*.....Hamilton, Ont.
John Burton, *Supt*.....Hamilton, Ont.
E. R. Baines, *Pur. Agt*.....Hamilton, Ont.
C. K. Domville, *Loco. Supt*.....Hamilton, Ont.
C. F. Hanson, *M. M*.....London, Ont.
Henry Childs, *Car Supt*.....London, Ont.
Green Bay, Winona & St. Paul R. R.
4-8½ g. 250 m. 19 lo. 599 cars.
Timothy Case, *V. P., Gen. Man*.Green Bay, Wis
James S. Mott, *Pur. Agt*.....Green Bay, Wis.
A. Fenwick, *M. M*.....Ft. Howard, Wis.
Gulf, Col. & Santa Fé Ry. 4-8½ g. 400 m. 32 lo. 1,000 c.
John Sealy, *Gen. Man*.....Galveston, Texas.
F. P. Killeen, *Asst. Gen. Man. & Pur. Agt*. do.
G. B. Nichols, *M. M*.....Galveston, Texas.
W. H. Martin, *M. C. B*.....Galveston, Texas.
Gulf, W'n Texas & Pac. Ry. 4-8½ g. 68 m. 6 lo. 70 c.
M. D. Monserrate, *Pr. & Supt*....Cuero, Texas.
James Mooney, *M. M*.....Cuero, Texas.

H

Halifax & Cape Breton Ry. 4-8½ g. 79 m. 5 lo. 237 c.
H. Abbott, *Manager*.....New Glasgow, N. S.
Hannibal & St. Jo. R. R. 4-8½ g. 292 m. 76 lo. 1,860 c.
John B. Carson, *Gen. Man*.....Hannibal, Mo.
W. R. Woodard, *Supt*.....Hannibal, Mo.
T. L. Dunn, *Ch. Eng. & Pur. Agt*..Hannibal, Mo.
Jas. Long, *Supt. M. P. & Car Dep*.Hannibal, Mo.
Hanover Junction, Hanover & Gettysburg R. R.
4-8½ g. 74 m. 9 lo. 106 cars.
H. D. Scott, *Gen. Supt*.....Hanover, Pa.
John J. Bingley *M. M*.....Hanover, Pa.
Henry Britcher, *M. C. B*.....Hanover, Pa.
Harrisburg & Potomac R. R. 4-8½ g. 27 m. 2 lo. 7 c.
R. H. Middleton, *Supt*.....Boiling Springs, Pa.
Hartford & Conn. Val. R. R. 4-8½ g. 45 m. 7 lo. 196 c.
Samuel Babcock, *Pr. & Supt*.....Hartford, Ct.
S. E. Brewer, *M. M*.....Hartford, Conn.
Hartford & Conn. W'n R. R. 4-8½ g. 69 m. 10 lo. 235 c.
John F. Jones, *Supt*.....Hartford, Ct.
J. C. Barton, *M. M*.....Hartford, Ct.
Housatonic R. R. 4-8½ g. 126 m. 22 lo. 495 cars.
W. H. Yeomans, *Supt*.....Bridgeport, Ct.
D. S. Draper, *Pur. Agt*.....Bridgeport, Ct.
N. Slingland, *M. M*.....Falls Village, Ct.
J. J. Ferris, *M. C. B*.....Falls Village, Ct.
Houston Belt Ry. 4-8½ and 3 gauge 50 miles.
S. L. Werden, *V. P. & Gen. Man*. Houston, Tex.
Houston, East & West Tex. Ry. 3 g. 109 m. 6 lo. 224 c.
Paul Bremond, *Pr. & Pur. Agt*..Houston, Tex.
E. L. Bremond, *Gen. Man*.....Houston, Tex.
A. Riggs, *M. M*.....Houston, Tex.
Houston & Tex. Cen. Ry. 4-8½ g. 701 m. 78 lo. 2,526 c.
G. Jordan, *V. Pr. & Gen. Man*....Houston, Tex.
A. H. Swanson, *Gen. Supt*.....Houston, Tex.
E. S. Larchar, *Pur. Agt*.....New York, N. Y.
L. C. Noble, *Gen. M. M*.....Houston, Tex.
James McGee, *M. C. B*.....Houston, Tex.
So. & Wn. Divs.: M. G. Howe, *Supt*.Houston, Tex.
No. & Mi. Divs.: G. A. Quinlan, *Supt*., and
C. H. Burns, *Asst. M. M*.....Corsicana, Tex.
No.-Wn. Div.: Donald Allen, *Supt*.....Waco, Tex.
Humeston & Shenandoah R. R.
4-8½ g. 85 m. 5 lo. 72 cars.
F. O. Wyatt, *Gen. Man*.....Clarinda, Ia.
M. B. Snyder, *M. M*.....Clarinda, Ia.
Huntingdon & Br. Top Mt. 4-8½ g. 62 m. 18 lo. 69 c.
Geo. F. Gage, *Gen. Supt*.....Huntingdon, Pa.
Samuel B. Knight, *Pur. Agt*..Philadelphia, Pa.
William Barkla, *M. M*.....Saxton, Pa.

I

Illinois Central R. R. 4-8½ g. 1,554 m. 224 lo. 6,172 c.
E. T. Jeffery, *Gen. Supt*.....Chicago, Ill.
C. A. Beck, *Asst. Gen. Supt*.....Chicago, Ill.
O. Ott, *Pur. Agt*.....Chicago, Ill.
Henry Schlacks, *Act. S. of Mach*...Chicago, Ill.
W. B. Snow, *M. M. Car Works*.....Chicago, Ill
Chic. Div.: T. J. Hudson, *Supt*.....Cairo, Ill.
Wm. Renshaw, *Act. M. M*.....Chicago, Ill.
Mid. Div.: H. L. Frisbie, *Supt*.....Pontiac, Ill.
Spring. Div.: W. Wilkinson, *Supt*.Springfield, Ill.
W. B. McKenna, *M. M*.....Clinton, Ill.
No'n Div.: J. C. Jacobs, *Supt*.....Amboy, Ill.
J. B. Edams, *M. M*.....Amboy, Ill.
So. Div.: David Oxley, *M. M*.....Centralia, Ill.
Ia. Div.: D. W. Parker, *Supt*.....Dubuque, Ia.
Thos. W. Place, *M. M*.....Waterloo, Ia.
Illinois Midland Ry. 4-8½ g. 176 m. 12 lo. 611 cars.
D. H. Conklin, *Rec. & Gen. Man*.....Decatur, Ill.
E. D. Frost, *Gen. Supt*..... do.
J. G. Clifford, *M. M*.....Terre Haute, Ind.
Illinois & St. Louis R. R. 4-8½ g. 18 m. 5 lo. 402 c.
C. H. Sharman, *Gen. Supt. & P. A*. Belleville, Ill.
W. O. Hewitt, *M. M*.....Belleville, Ill.
Charles Rotha, *M. C. B*.....E. St. Louis Ill.
Indiana, Bloomington & Western Ry.
4-8¾ g. 712 m. 64 lo. 3,650 cars.
C. E. Henderson, *Gen. Man*. Indianapolis, Ind.
J. H. Wilson, *Gen. Supt*.....Indianapolis, Ind.
H. C. Norton, *Pur. Agt*.....Indianapolis, Ind.
B. Warren, *Gen. M. M*.....Indianapolis, Ind.
Peoria Div.: I. H. Wilson, *Supt*..Indianapolis, Ind.
E. Hiserodt, *M. M*.....Urbana, Ill.
St. Louis Div.: I. H. Wilson, *Supt*.....Indnpls, Ind.
John King, *M. M*.....Indianapolis, Ind.
Ohio Div.: C. T. Tyler, *Supt*.....Sandusky, O.
Jos. S. Porter, *M. M*.....Sandusky, O.
Indiana, Illinois & Iowa R. R. 42 miles.
F. M. Drake, *Gen. Man*.....Kankakee, Ill.
J. P. Shouts, *Supt*.....Kankakee, Ill.
Ind'p'lis & St. Louis R. R. 266 m. 56 lo. 2,276 c.
C. C. Gale, *Gen. Supt*.....Indianapolis, Ind.
J. L. Yale, *Pur. Agt*.....Cleveland, O.
W. F. Turneff, *Gen. M. M*.....Cleveland, O.
T. W. Ransom, *M. M. & C. B*.....Mattoon, Ill.
Indianapolis & Vincennes R. R. (*See Penna. Co.*)
Intercolonial Ry. 4-8½ g. 846 m. 111 lo. 3,223 cars.
David Pottinger, *Chief Supt*.....Moncton, N. B.
T. V. Cooke, *Gen. Storekeeper*..Moncton, N. B.
H. A. Whitney, *Mech. Supt*.....Moncton, N. B.
Ewd. Shaffer, *M. C. B*.....Moncton, N. B.
Monc. Div.: James E. Price, *Supt*. Moncton, N. B.
Hal. & St. J. Div.: Jas. Coleman, *Supt*.....Truro, N. B.
No'n Div.: M. Busby, *Supt*.....Cambellton, N. B.
Levis Div.: M. McDonald, *Supt*. Rivière du Loup, Q.
International Ry. 4-8½ g. 69 m. 2 lo. 12 cars.
D. E. McFee, *Supt*.....Sherbrooke, Que.
International & Gt. N'n R. R. (*See St. L., I. M. & S.*)
Iron Mountain & Helena R. R. 4-8½ g. 27 m. 2 lo. 11 c.
Wm. Bailey, *Pres. & Gen. Man*.....Helena, Ark.
D. Stillinger, *Supt*.....Helena, Ark.
F. M. Green, *Pur. Agt*.....Helena, Ark.
Wm. Summers, *M. C. B*.....Helena, Ark.
Ithaca, Auburn & Western R. R. 4-8½ g. 38 m.
Fred T. Peet, *Supt*.....Auburn, N. Y.
Ira Dunning, *M. M*.....Auburn, N. Y.

J

Jacksonville So.-E'n R. R. 4-8½ g. 54 m. 5 lo. 68 c.
E. S. Greenleaf, *Supt*.....Jacksonville, Ill.
Ira Petrie, *M. M*.....Jacksonville, Ill.
Jacksonv., Pensacola & Mob. (*See Fla. Ce. t. & W.*)
Jamesville & Washington. 4-8½ g. 22 m. 3 lo. 24 c.
A. Fisher, *Manager*.....Dymond City, N. C.
J. E. Lordley, *M. M. & C. B*..Dymond City, N. C.
Jeffersonv'l, Madison & Indpls. R. R. (*See Pa. Co.*)
Jersey City & Albany R. R. 4-8½ g. 38 m.
J. W. McCulloh, *Manager*.....Jersey City, N. J.
Junction & Breakwater: Breakwater & Frankford; and Worcester R. Rs. 4-8½ g. 101 m. 6 l. 133 c.
J. & B. Rd.: Thos. Groome, *Supt*.....Lewes, Del.
Geo. Messick, *M. M*.....Lewes, Del.
W. H. Virden, *M. C. B*.....Lewes, Del.
B. & F. and W. Rds.: J. L. Mapes, *St* Berlin, Md.

K

Kansas Central R. R. (*See Union Pacific.*)
Kansas City, Lawrence & So. Kansas.
C. C. Wheeler, *Gen. Man*.....Topeka, Kan.
J. L. Barnes, *Supt*.....Lawrence, Kan.
F. M. Smith, *Pur. Agt*.....Topeka, Kan.
T. D. Volk, *M. M*.....Ottawa, Kan.
Kansas City, Fort Scott & Gulf R. R. 4-8½ g.
Geo. H. Nettleton, *Gen. Man*..Kansas City, Mo.
L. W. Towne, *Gen. Supt*.....Kansas City, Mo.
H. P. Jacques, *Pur. Agt*.....Kansas City, Mo.
J. L. Barnes, *Supt*.....Kansas City, Mo.
J. S. McCrum, *M. M*.....Kansas City, Mo.
A. N. Montier, *M. C. B*.....Kansas City, Mo.
Kansas City, St. Joseph & Council Bluffs; and St. Jo. & Des Moines R. Rs. 4-8½ g. 368m. 38 lo. 1,148 cars.
J. F. Barnard, *Gen. Supt. & P. A*.St. Joseph, Mo.
F. A. Chase, *M. M*.....St. Joseph, Mo.
Thos. Aylesbury, *M. C. B*.....St. Joseph, Mo.
Kendall & Eldred R. R. (*See Olean, B. & W.*)
Kent Co.; Sm. & Del. Bay Rds. 4-8½ g. 50 m. 2 lo. 13 c.
Fred Gerker, *Gen. Man*.....Chestertown, Md.
Kentucky Central R. R. 4-9 g. 150 m. 19 lo. 371 cars.
G. W. Bender, *Supt*.....Covington, Ky.
A. N. Watts, *F. of M*.....Covington, Ky.
J. L. Hackathorn, *M. C. B*.....Covington, Ky.
Kentucky & South Atlantic Ry. 3 g. 23 m. 3 lo. 52 c
Geo. B. Harper, *Supt. & P. A*..Mt. Sterling, Ky.
S. P. Hatfield, *M. M*.....Mt. Sterling, Ky.
Kinzua R. R. (*See Olean, B. & W.*)
Kingston & Pembroke Ry. 4-8½ g. 65 m. 4 lo. 76 c.
B. W. Folger, *Supt*.....Kingston, Ont.
Wm. Harty, *Pur. Agt*.....Kingston, Ont.
Geo. Becker, *M. M*.....Kingston, Ont.
Knox & Lincoln R. R. 4-8½ g. 49 m. 5 lo. 92 cars.
C. A. Coombs, *Supt*.....Bath, Me.
Wm. A. Field, *M. M*.....Bath, Me.
C. L. Turner, *M. C. B*.....Bath, Me.
Knoxville & Augusta R. R. 4-6 g. 16 m. 2 lo. 34 cars.
J. M. Hood, *Supt*.....Marysville, Tenn.
M. R. Hood, *Pur. Agt*.....Marysville, Tenn.

L

Lake Erie & Western Ry. 4-8½ g. 362 m. 43 l. 1,526 c.
E. H. Waldron, *Gen. Man*.....La Fayette, Ind.
E. H. Andress, *Pur. Agt*.....La Fayette Ind.
H. L. Cooper, *Supt. of Equipment*.....Lima, O.
Sandusky Div.: D. S. Hill, *Supt*.....Fremont, O.
Bloom. Div.: *Supt*...La Fayette, Ind.
Lake Shore & Michigan So'n Ry.
4-8½ g. 1,243 m. 537 lo. 16,018 cars.
John Newell, *Gen. Man*.....Chicago, Il
P. P. Wright, *Gen. Supt*.....Cleveland, O
A. C. Armstrong, *Pur. Agt*.....Cleveland, O
James Sedgley, *Gen. M. M*.....Cleveland, O.
John Kirby, *Gen. M. C. B*.....Cleveland, O.
Buffalo Div.: C. B. Couch, *Supt*.....Cleveland, O.
J. S. Graham, *M. M*.....Buffalo, N. Y.
A. C. Robson, *M. C. B*.....Buffalo, N. Y.
Frank. Div.: G. H. McIntire, *Supt*. Stoneboro, Pa.
Erie Div.: C. B. Couch, *Supt*.....Cleveland, O.
L. O. Gassett, *M. M*.....Cleveland, O.
J. Withycombe, *M. C. B*.....Cleveland, O.
Toledo Div.: Thos. Flesher, Jr.. *Supt*.Cleveland, O.
J. M. Sanborn, *M. M*.....Norwalk, O.
W. O. Smith, *M. C. B*.....Norwalk, O.
Mich. Div.: J. E. Curtis, *Supt*.....Toledo, O.
Det. Div.: T. J. Charlesworth, *Supt*. Detroit, Mich.
Lansing Div.: W. H. Caniff, *Supt*..Lansing, Mich.
Western Div.: J. H. Parsons, *Supt*...Chicago, Ill.
G. W. Stevens, *M. M.* (M. S. Divs.) Elkhart, Ind.
Frank O. Bray, *M. C. B*.....Adrian, Mich.
Ft. Wayne Branch:
W. H. Caniff, *Supt*.....Jackson, Mich.
Lebanon Springs R. R. 4-8½ g.
W. C. Alstyne, *Manager*.....Albany, N. Y.
J. K. Hotaling, *Pur. Agt*.....Albany, N. Y.
Geo. Tefft, *M. M*.....Chatham, N. Y.
Lehigh Valley R. R. 4-8½ g. 545 m. 321 lo. 33,817 c.
Gen. Supt.....Bethlehem, Pa.
H. S. Goodwin, *Asst. Gen. Supt*. Bethlehem, Pa.
L. Chamberlain, *Pur. Agt*.....Philadelphia, Pa.
John S. Lentz, *M. C. B*.....Packerton, Pa.
N. J. Div.: H. E. Packer, *Supt*..New York, N. Y.
John I. Kinsey, *M. M*.....So. Easton, Pa.
Coal Rds.: J. I. Blakeslee, *Supt*. Mauch Chunk, Pa.
P. Hofecker, *M. M*.....Weatherly, Pa.
John Campbell, *M. M*.....Delano, Pa.
B. M. Div.: A. G. Brodhead, *S*..Mauch Chunk, Pa.
D. Clark, *M. M*.....Hazleton, Pa.
Wy. Div.: A. Mitchell, *S. & M. M* Wilkesbarre, Pa.
Pa. & N. Y.; and Geneva, Ithaca & Sayre R. Rs.
Wm. Stevenson, *Supt*.....Sayre, Pa
J. N. Weaver, *M. M*.....Waverley, Pa
Ligonier Valley R. R. 3 g. 11 m. 2 lo. 22 cars.
Thos. A. Mellon, *Gen. Manager*..Pittsburg, Pa.
Geo. Lenft, *Supt. & P. Agt*.....Latrobe, Pa.
Little Rock, Miss. River & Texas Ry.
4-8½ g. 160 m. 12 lo. 260 cars.
J. A. Woodson, *G. S. & P. A*. Little Rock, Ark.
F. Hufsmith, *M. M. & C. B*...Arkansas City, Ark.
Little Rock & Fort Smith. 4-8½ g. 168 m. 12 lo. 353 c.
T. Hartman, *Gen. Supt*.....Little Rock, Ark.
James Eblin, *M. M*.....Argenta, Ark.
James Malone, *M. C. B*.....Argenta, Ark.
Long Island R. R. 4-8½ g. 325 m. 79 lo. 740 cars.
I. D. Barton, *Supt*.....Long Island City, N. Y.
Benj. Norton, *Pur. Agt*. Long Island City, N. Y.
C. A. Thompson, *M. M. & C. B*..... do.
Louisville, New Albany & Chicago Ry.
4-8½ g. 380 miles 33 lo. 2,800 cars.
John MacLeod, *Gen. Supt*.....Louisville, Ky.
H. O. Nourse, *Pur. Agt*.....Louisville, Ky.
Josiah Beitls, *M. M. & C. B*...New Albany, Ind.
Louis., Evans. & St. L. Ry. 4-8½ g. 254 m. 24 lo. 691 c.
Webster Snyder, *Gen. Man*.....Louisville, Ky.
R. G. Butler, *Gen. Supt*.....Louisville, Ky.
W. H. Field, *Pur. Agt*.....Louisville, Ky.
F. M. Mast, *M. M*.....Evansville, Ind.
Louisville & Nashville R. R.
5 g. 2,072 m. 316 lo. 6,131 cars.
Fred. de Funiak, *Gen. Man*.....Louisville, Ky.
G. C. Breed, *A. Gen. Man. & Pur. Agt*. do.
D. W. C. Rowland, *Gen. Supt. Trans*. do.
Reuben Wells, *Supt. Mach*.....Louisville, Ky.
Louisv. Divs.; and Louisv., Cin. & Lex. Ry. (Cin. Div.)
J. G. Metcalf, *Supt*.....Louisville, Ky.
P. Leeds, *M. M.* (Lo. Div.).....Louisville, Ky.
J. W. Luttrell, *M. M.* (Cin. Div.) Louisville, Ky.
W. P. Pike, *M. M.* (2d & C. Div.). Bowling Green, Ky.
Nash. & D. Div.: J. Geddes, *Supt*. Nashville, Tenn.
W. H. Thomas, *M. M*.....Nashville, Tenn.
S. & N. A. Div.: E. Marsh, *Supt*. Birmingham, Ala.
C. W. White, *M. M*.....Birmingham, Ala.
Mob. & M.; N. Div. Pens. & Sel.; Sl. & Mont. R. Rs.:
M. S. Belknap, *Supt*.....Montgomery, Ala.
J. N. Hall, *M. M.* (Mont. Shops) Montgomery, Ala.
N. O. Div.: J. T. Harrihan, *Supt*. New Orleans, La.
Wm. Adair, *M. M*.....Mobile, Ala.
Memp. Div.: W. Colcamp, *Supt*. Memphis, Tenn.
J. V. Slusser, *M. M*.....Memphis, Tenn.
St. L. Div.: J. Montgomery, *Supt*. Evansville, Ind.
Thos. Walsh, *M. M*.....Mt. Vernon, Ill.
Pensacola and So. Div. Pens. & Selma Rds.:
R. B. Small, *Supt*.....Pensacola, Fla.
Louisville & Wadley R. R. 5 g. 10 m.
J. H. Wilkins, *Pr. & Supt*.....Louisville, Ga.

M

Maine Central R. R. 4-8½ g. 470 m. 58 lo. 1,335 c.
Payson Tucker, *Supt*.....Portland, Me.
Ira K. Russell, *For. Mach. Sh*..Waterville, Me.
C. H. Kenison, *For. Car Sh*.....Augusta, Me.
Manchester & Keene R. R. (*See B. L. & C.*)
B. F. George, *Asst. Supt*.....Keene, N. H.
Manhattan Ry. 4-8½ g. 32 m. 203 lo. 596 pass. c.
Frank K. Hain, *Gen. Man*.....New York, N. Y.
C. L. Green, *Supt*.....New York, N. Y.
T. W. Peeples, *M. M*.....New York, N. Y.
H. A. Webster, *M. C. B*.....New York, N. Y.
Marietta & Cin. R. R. 4-8½ g. 312 m. 65 lo. 1,422 c.
Jas. H. Stewart, *Supt*.....Cincinnati, O.
Edw. Evans, *M. M*.....Chillicothe, O.
Marietta & North Georgia R. R. 3 g. 24 m. 1 lo. 5 c.
J. B. Glover, *Supt & P. Agt*.....Marietta, Ga.
E. A. Withers, *M. M*.....Marietta, Ga.
Marquette, Houghton & Ontonagon R. R.
4-8½ g 87 m. 30 lo. 2,074 cars.
Samuel Schoch, *Gen. Man*.....Marquette, Mich.
M. B. McGee, *Pur. Agt*.....Marquette, Mich.
W. H. Williams, *M. M*.....Marquette, Mich.
H. D. Lyons, *M. C. B*.....Marquette, Mich.
Massachusetts Central R. R. 4-8½ g. 48 m.
N. C. Munson, *Gen. Man*.....Boston, Mass.
E. G. Allen, *Supt. & P. A*.....Boston, Mass.
S. H. Munson, *Supt. M. P*...So. Sudbury, Mass.
McKean & Buffalo R. R. 4-8½ g. 22 m. 2 lo. 8 cars.
S. G. Godden, *Supt*.....Smethport, Pa.
Alex. White, *Pur. Act*.....Smethport, Pa.
Memphis & Charleston R. R. (*See E. Tenn. Va. & Ga.*)
Memphis & Lit. Rock R. R. 5 g. 135 m. 14 lo. 272 c.
E. K. Sibley, *G. Man. & P. A*..Little Rock, Ark.
Wm. E. Smith, *Supt*.....Memphis, Tenn.
Thos. Rennell, *M. M*.....Argenta, Ark.
P. Twitchell, *M. C. B*.....Argenta, Ark.
Mexican Central Ry.
Rudolph Fink, *Gen. Man*.....City of Mexico.
D. B. Robinson, *Gen. Supt*. El Paso del Norte, Mex.
J. H. Garner, *Supt*.....City of Mexico.
Howard Hinckley, *Pur. Agt*.....Boston, Mass.
Jas. N. Lauder, *Supt., M. P. & R. S.*
El Paso del Norte, Mex.
F. W. Johnson, *M. M*.....City of Mexico.
J. H. O'Brien, *M. C. B*.....City of Mexico.
Mexican National Ry. (*See Tex.-Mex.*.
Michigan Cen. R. R. 4-8½ g. 958 m. 233 lo. 6,552 c.
H. B. Ledyard, *Gen. Man*.....Detroit, Mich.
E. C. Brown, *Asst. Gen. Supt*....Jackson, Mich.
Allan Bourn, *Pur. Agt*.....Detroit, Mich.
S. H. Edgerly, *Gen. M. M*.....Jackson, Mich.
Robert Miller, *Gen. M. C. B*.....Detroit, Mich.
East. Div.: D. S. Sutherland, *Supt*. Detroit, Mich.
Bay City, Saginaw & Mackinaw Divisions.:
W. A. Vaughan, *Supt*.....Bay City, Mich.
R. P. Baillie, *M. M*.....Bay City, Mich.
Main Line: Gr. Rap.; So. Bend: and So. Hav. Divs.:
C. B. Bush, *Supt*.....Jackson, Mich.
W'n Divs.: R. H. L'Hommedieu, *Supt*. Chicago, Ill.
Middleburg & Schoharie; and
Schoharie Valley R. Rs. 4-8½ g. 10 m. 2 lo. 4 cars
S. S. Danforth, *Gen. Supt*.....Middleburg, N. Y.
Midland of Canada. 4-8½ g. 143 m. 12 lo. 503 cars.
Geo. A. Cox, *Gen. Man*.....Peterborough, Ont.
W. B. Ferguson, *Gen. Supt*. Peterborough, Ont.
C. H. Crofts, *Storekeeper*...Peterborough, Ont.
Wm. Marling, *Mech. Supt*.....Port Hope, Ont.
Edward Douglas, *M. C. B*.....Port Hope, Ont.
Wm. Polson, *M. M.* (G. J. Ry.)...Belleville, Ont.
Victoria Div.: F. B. Polson, *M. M*...Lindsay, Ont.
H. H. Harry, *M. C. B*.....Lindsay, Ont.
Toronto & Nipissing Div. 3-6 g. 105 m. 12 lo. 211 c.
J. Haggas, *M. M*.....Uxbridge, Ont.
Chas. E. Caron, *M. C. B*.....Uxbridge, Ont.
Midland No. Car. Ry. 4-8½ g. 95 m. 9 lo. 54 cars.
J. W. Andrews, *Gen. Man*.....Newbern, N. C.
Jno. P. Caddagan, *Pur. Agt*.....Newbern, N. C.
J. W. Andrews, *Supt*.....Goldsboro, N. C.
B. Manly, *Supt. of Mach*.....Newbern, N. C.
Milwaukee, Lake Shore & Western Ry.
4-8½ g. 250 m. 28 lo. 809 cars.
H. G. H. Reed, *Gen. Man. & P. Agt* Milwaukee, Wis.
J. Donahue, *Supt*.....Milwaukee, Wis.
Chas. S. Hayden, *Asst. Supt*...Manitowoc, Wis.
David B. Curtis, *Asst. Supt*.....Oshkosh, Wis.
John Hickey, *M. M*.....Manitowoc, Wis.
Milwaukee & Northern.
C. F. Dutton, *Gen. Supt*.....Milwaukee, Wis.
N. S. Kimball, *M. M*.....Green Bay, Wis.
Mineral Range R. R. 3 g. 13 m. 4 lo. 42 cars.
Chas. E. Holland, *Pr. & Supt*...Hancock, Mich.
W. H. Carr, *Pur. Agt*.....Hancock, Mich.
T. J. Shellhorn, *M. M*.....Hancock, Mich.
C. Angie, *M. C. B*.....Hancock, Mich.
Minneapolis, Lyndale & Minnetonka Ry.
3 g. 20 m. 2 lo. 2 motors 39 cars.
Wm. McCrory, *Supt. & Pur. Agt*., and
R. Curtis, *M. M*.....Minneapolis, Minn.
Minneapolis & St. L. Ry. 4-8½ g. 506 m. 60 lo. 1,850 c.
C. H. Hudson, *Gen. Man*.....Minneapolis, Minn.
E. B. Parke, *Pur. Agt*.....Minneapolis, Minn.
E. Ryder, *Supt*.....Minneapolis, Minn.
H. A. Towne, *Supt. of Mach*. Minneapolis, Minn.
Mississippi & Tenn. R. R. 5 g. 101 m. 11 lo. 194 c.
M. Burke, *Supt*.....Memphis, Tenn.
J. C. Ramsey, *M. M*.....Memphis, Tenn.
S. J. Bolton, *M. C. B*.....Memphis, Tenn.
Missouri Pacific Ry. 4-8½ g. 2,687 m. 324 lo. 10,000 c.
A. A. Talmage, *Gen. Man*.....St. Louis, Mo.
A. W. Dickinson, *Asst. Gen. Supt*. St. Louis, Mo.
R. B. Lyle, *Pur. Agt*.....St. Louis, Mo.
John Hewitt, *Supt. Mach*.....St. Louis, Mo.
John Hodge, *Supt. Car Dep*.....St. Louis, Mo.

Main Line, Warder Cumming, Supt....Sedalia, Mo.
C. L. Dunham, Supt. W'n Div....Kansas City, Mo.
Le Roy Bartlett, Asst. M. M....St. Louis, Mo
Geo. Walshe, M. M....Sedalia, Mo
Ks. & Tex. Div., J. M. Eddy, Supt....Sedalia, Mo.
J. C. Barber, Asst. Supt. Car Dep....Sedalia, Mo.
Wm. T. Small, M. M....Parsons, Kan.
Dallas, Ex., L. L. Keller, Supt....Dallas, Tex.
Cen. Br. Div., W. W. Fagan, Supt....Atchison, Kan.
H. V. Faries, M. M....Atchison, Kan.
S. Irvin, Asst. Supt. Car Dep....Atchison, Kan.
Mobile & Ala. Grand Trunk R. R. 5 g. 59 m. 2 lo. 23 c.
Wm. H. Pratt, Trustee....Mobile, Ala.
Mobile & Girard R. R. 5 g. 84 m. 5 lo. 80 cars.
W. L. Clark, Gen. Supt....Columbus, Ga.
J. C. Albrecht, M. M....Columbus, Ga.
A. J. Nix, M. C. B....Columbus, Ga.
Mobile & Ohio R. R. 5 g. 528 m. 75 lo. 1,353 cars.
A. L. Rives, V. Pr. & Gen. Man....Mobile, Ala.
R. H. Briggs, Gen. M. M....Whistler, Ala.
J. T. Booth, M. C. B....Whistler, Ala.
So'n Div., L. G. Motley, Supt....Mobile, Ala.
John Fitzgerald, M. M....Macon, Miss.
No'n Div.: E. S. Horsford, Supt....Jackson, Tenn.
M. T. Carson, M. M....Jackson, Tenn.
Mobile & Spring Hill R. R. 5 g. 8 m. 10 lo. 90 cars.
F. Ingate, Supt....Mobile, Ala.
Mont Alto R. R. 4-9 g. 21 m. 2 lo. 3 cars.
G. B. Weistling, Supt. & P. A....Mont Alto, Pa.
Montpelier & Wells Riv. R. R. 4-8½ g. 38 m. 3 lo. 76c.
Supt....Montpelier, Vt.
Morgan's Louisiana & Tex. R. R. 4-8½ g. 165 m.
G. Pandeley, Supt....New Orleans, La.
C. Trumpy, Pur. Agt....New Orleans, La.
N. Tilton, M. M....Algiers, La.
Wm. O'Brien, M. C. B....Algiers, La.
Muncy Creek Ry. 4-8½ g. 10 m.
Benj. G. Welch, Rec. & P. Agt....Hughesville, Pa.
J. V. Chamberlain, Supt. & M. M. do.

N

Nashville, Chattanooga & St. Louis R'y.,
5 g. 508 miles 87 lo. 1,979 cars.
F. de Funiak, Gen. Man....Louisville, Ky.
J. W. Thomas, G. Supt. & P. Agt....Nashville, Tenn.
M. J. C. Wrenne, Supt....Nashville, Tenn.
James Cullen, M. M....Nashville, Tenn.
J. G. Sawyer, M. C. B....Nashville, Tenn.
Natchez, Jackson & Col. R. R. 3-6 g. 60 m. 4 lo. 32 c.
Belton Mickel, Supt....Natchez, Miss.
Naugatuck R. R., 4-8½ g. 61 miles, 12 lo. 334 cars.
Geo. W. Beach, Supt....Waterbury, Ct.
Henry Hanford, M. M....Bridgeport, Ct.
Geo. W. Gray, M. C. B....Bridgeport, Ct.
Nevada Central R. R. (See Union Pac.)
Nevada County N. G. R. R. 3 g. 23 m. 3 lo. 46 cars.
John F. Kidder, Supt....Grass Valley, Cal.
Jas. McCormick, M. M. & C. B....Grass Valley, Cal.
New Brunswick Ry. 4-8½ g. 194 m. 12 lo. 266 cars.
E. R. Burpee, Gen. Man....Gibson, N. B.
Henry Osborn, Gen. Supt....Gibson, N. B.
Alfred Seely, Pur. Agt....Gibson, N. B.
Jesse Mathews, M. M....Gibson, N. B.
T. N. Burpee, M. C. B....Gibson, N. B.
New Brunswick & Can. Ry. 4-8½ g. 127 m. 12 lo. 184c.
Henry Osborn, G. M. & P. A....St. Andrew's, N. B.
John Stewart, Supt....St. Stephen, N. B.
Thos. Armstrong, M. M....St. Andrew's, N. B.
G. Houlton, M. C. B....St. Andrew's, N. B.
New Castle & Oil City R. R. 4-9 g. 38 m. 4 lo. 30 cars.
A. Vandiwort, Supt....New Castle, Pa.
New Haven & Derby R. R. 4-8½ g. 13 m. 3 lo. 58 c.
E. S. Quintard, Supt....New Haven, Conn.
J. M. Whitlock, M. M. & C. B....New Haven, Conn.
New Haven & No'mpton. 4-8½ g. 135 m. 26 lo. 572 c.
C. A. Goodnow, Supt....New Haven, Ct.
C. N. Yeamans, Pur. Agt....New Haven, Ct.
Henry Fox, M. M....New Haven, Ct.
John Sweeny, M. C. B....New Haven, Ct.
New Jersey & New York Ry. 6 g. 43 m. 6 lo. 40 c.
J. D. Hasbrouck, Gen. Man....Jersey City, N. J.
J. S. Drake, Supt. & M. M....Hillsdale, N. J.
L. B. Van Wagonen, M. C. B....Hillsdale, N. J.
New Jersey Southern Ry. (See Central, N. J.)
New London Northern R. R (See Central Ver.)
New Orleans Pacific Ry. 5 g. 85 m. 10 lo. 206 cars.
H. S. Morse, Supt....New Orleans, La.
E. R. Smith, M. M. & C. B....New Orleans, La.
N. Y. Central & Hudson River R.R.
4-8½ g. 962 m. 676 lo. 22 539 cars.
J. M. Toucey, Gen. Supt....New York, N. Y.
R. C. Moore, Pur. Agt....New York, N. Y.
Wm. Buchanan, Supt. M. P....New York, N. Y.
Amos Gould, Asst. Supt. M. P....New York, N. Y.
L. Garey, Supt. Car Dept....New York, N. Y.
N. Y. & Har. Div.: C. M. Bissell, Supt. do.
P. McQ. Gibson, M. M....New York, N. Y.
C. E. Garey, M. C. B....Morrisania, N. Y.
Hud. Riv. Div.: C. M. Bissell, Supt....N. York, N. Y.
Peter Smith, M. C. B....New York, N. Y.
E'n Div.: Zenas C. Priest, Supt....Utica, N. Y.
G. B. Van Vorst, M. M....West Albany, N. Y.
D. Hoit, M. C. B....West Albany, N. Y.
W'n Div.: Geo. H. Burrows, Supt....Rochester, N. Y.
S. L. White, M. M....Syracuse, N. Y.
E. A. Olmstead, M. C. B....E. Buffalo, N. Y.
C. H. Burchard, M. C. B....E. Rochester, N. Y.
Rd. Donaby, M. C. B....Niagara Falls, N. Y.
N. Y. Chic. & St. L. Ry. 4-8½ g. 269 m. 36 lo. 1,063c.
L. Williams, Gen. Man....Cleveland, O.
E. Dwight, Gen. Supt....Cleveland, O.
J. W. Dogherty, Pas. Agt....Cleveland, O
Ross Kells, S. M. P. & M....Cleveland, O.
Eas'tn Div.: G. H. Kimball, Supt....Erie, Pa.
Mid. Div.: C. H. Cory, Supt....Fostoria, O.
West'n Div.: E. E. Dwight, Supt....Chicago, Ill.
New York City & Northern. 4-8½ g. 52 m. 7 lo. 91 c.
F. S. Gannon, Gen. Supt....High Bridge, N. Y.
M. McNally, M. of M....High Bridge N. Y.
New York, Lake Erie & Western R. R.
4-8½ g. 1,020 m. 544 loco. 24,400 cars.
Robt. Harris, V. Pr. & G. Man....New York, N.Y.
E. S. Bowen, Gen. Supt....New York, N. Y.
J. A. Hardenburg, Pur. Agt....New York, N. Y.
F. M. Wilder, Supt. M. P. & M....Susqueh'a, Pa.
E'n Div.: E. O. Hill, Supt....Jersey City, N. J.
J. H. Vreeland, M. M....Jersey City, N. J.
J. N. Mileham, M. C. B....Jersey City, N. J.
Del. Div.: W. J. Murphy, Supt....Port Jervis, N. Y.
J. Van Vechten, M. M. & C. B....Pt. Jervis, N. Y.
Susq. Div.: R. B. Cable, Supt....Elmira, N. Y.
V. Blackburn, M. M....Susquehanna, Pa.
D. B. Goodell, M. C. B....Elmira, N. Y.
Buf. & R. Divs.: Chas. Neilson, Supt.; and
G. B. Ross, M. M....Buffalo, N. Y.
M. Wilder, M. C. B....Buffalo, N. Y.
B. & S.-W. Div.: C. A. Brunn, Supt do.
W'n Div.: W. B. Coffin, Supt....Hornellsville, N. Y.
M. Gunn, M. M....Hornellsville, N. Y.
New York, New Haven & Hartford R. R.
4-8½ g. 203 m. 102 lo. 2,416 cars.
E. M. Reed, V. P. & Gen. Man....New Haven, Ct.
R. N. Dowd, Pur. Agt....New Haven, Ct.
N. Y. & N. H. Div.; W. H. Stevenson, Supt....N. Y.
Shore Div.: O. M. Shepard Supt....N. Haven, Ct.
H. Kettendorf, Supt. M. P....New Haven, Ct
Jas. Denver, M. C. B....New Haven, Ct.
Hart. Div.: C. S. Davidson, Supt....Hartford, Ct.
John Henny, Jr., Supt. M.P. & M. C. B.... do.
New York, Ontario & Western Ry.
4-8½ g. 345 m. 79 lo. 1,539 cars.
Jas. E. Childs, Gen. Supt....New York, N. Y.
I. W. Fowler, Pur. Agt....Middletown, N. Y.
Edw. Minshull, M. M. & C. B....Middletown, N. Y.
Mid. Div.: N. R. Hankins, Supt....Middletown, N. Y.
No'n Div.: C. W. Lanpher, Supt....Norwich, N. Y.
So. Div.: E. Canfield, Supt....Tappan, N. Y.
New York, Pennsylvania & Ohio R. R.
4-8½ g. 564 m. 215 lo. 7,387 cars.
J. M. Ferris, Gen. Man....Cleveland, Ohio.
J. H. Holway, Pur. Agt....Cleveland, Ohio.
Wm. Fuller, Gen. M. M. & C. B....Cleveland, O.
S. V. Smith, Asst. Gen. M. C. B....Kent, Ohio.
E'n Div.: A. L. Dunbar, Supt....Meadville, Pa.
J. A. Cooper, M. M....Meadville, Pa.
D. S. Dockstader, M. C. B....Meadville, Pa.
J. F. Fosdick, For. Car Rep....Salamanca, N. Y.
W'n Div.: J. W. Alsop, Supt....Galion, O.
Wm Hill, M. M....Galion, O.
J. W. Holmes, For. Car Rep....Galion, O.
Geo. Wilson, For. Car Rep....Dayton, Ohio.

Maho'g Div.: N. F. Wood, Supt....Cleveland, O.
N. Wright, M. M....Cleveland, O.
C. N. Thorp, M. C. B....Cleveland, O.
New York, Providence & Boston R. R.
4-8½ g. 72 m. 29 lo. 430 cars.
J. B. Gardner, Supt....Providence, R. I.
Giles F. Ward, Pur. Agt....Stonington, Conn.
J. H. Anderson, M. M. & C. B....Providence, R. I.
N. Y., Susquehanna & W'n. 4-9 g. 86 m. 20 lo. 350 c.
H. M. Britton, Gen. M. & P. A....New York, N. Y.
W. C. Ennis, M. M. & C. B....Wortendyke, N. J.
New York, West Shore & Buffalo Ry.
Chas. Paine, Gen. Man....New York, N. Y.
Howard Fry, Supt. M. P....New York, N. Y.
New York, Woodhaven & Rockaway R. R.
4-8½ g. 26 m. 8 lo. 101 cars.
J. M. Lunt, Supt. & P. Agt....Hunter's Pt., L. I.
W. B. Turner, M. M....Hunter's Point, L. I.
N. Y. & Greenwood Lake Ry. 4-8½ g. 42 m. 8 lo. 53 c.
J. H. Tinney, Acting Supt....Jersey City, N. J.
J. A. Hardenburg, Pur. Agt....Jersey City, N. J.
G. A. Hill, M. M....Pompton, N. J.
N. Y. & Manhattan Beach Ry. 3 g. 23 m. 12 lo. 128 c.
D. C. Corbin, Man. Dir....New York, N. Y.
O. Fairhurst, M. M....Greenpoint, L. I.
New York & New England R. R.
4-8½ g. 463 m. 127 lo. 3,326 cars.
S. M. Felton, Jr., Gen. Man....Boston, Mass.
W. W. McKim, Pur. Agt....Boston, Mass.
A. K. Mansfield, Supt. M. P....Boston, Mass.
D. P. Wright, M. C. B....Norwood, Mass.
H. B. Barker, Gen. Fore....Norwood, Mass.
East Div: C. C. F. Bent, Supt....Boston, Mass.
C. B. Moore, M. M....Boston, Mass.
Nor. Div.: P. St. M. Andrews, Supt....Norwich, Ct.
Richard Colburn, M. M....Norwich, Ct.
Prov. Div.: L. W. Palmer, Supt....Providence, R. I.
Hfd. Div.: E. Holbrook, Supt....Hartford, Ct.
E. M. Humstone, M. M....Hartford, Ct.
Newburg, Dutchess & Conn. R. R. 4-8½ g. 58 miles.
C. L. Kimball, Gen. Supt....Mattewan, N. Y.
W. G. Van Buskirk, M. M. & C. B. do
Norfolk & Western R. R. 5 g. 428 m. 82 lo. 1,220 c.
Henry Fink, 2d V. Pr. & Gen. Man....Lynchb'g, Va.
W. C. De Armond, Pur. Agt....Philadelphia, Pa.
C. Blackwell, Supt. M. P....Roanoke, Va.
Va. & Tenn. Div.: F. Sterk, M. M....Lynchburg, Va.
Frank Huger, Supt....Lynchburg, Va.
W. A. Morgan, M. C. B....Lynchburg, Va.
Nor. & Pt. Div.: N. M. Osborne, Supt.
J. T. Robinett, M. M. & C. B....Petersburg, Va.
North-Eastern R. R. of Ga. 5 g. 40 m. 2 lo. 18 cars.
H. R. Bernard, Supt....Athens, Ga.
Jno. J. Longest, M. C. B....Athens, Ga.
North-Eastern R. R. (S. C.) (See Wil. & Wel.
North Pacific Coast R. R. 3 g. 80 m. 12 lo. 316 cars.
David Nye, Gen. Supt....San Rafael, Cal.
W. F. Russell, Pur. Agt....San Francisco, Cal.
J. Fowler, M. M....Sancelito Cal.
North Shore
A. Davis, Gen. Man....Quebec, Can
Northern (N. H.), and Concord & Claremont Rys.
4-8½ g. 173 m. 25 lo. 569 cars.
Geo. E. Todd, Supt....Concord, N. H.
Ed. Studley, M. M. & C. B. & Pur. Agt do.
Northern (N. J.) R. R. (See N. Y., L. E. & W'n.)
Northern Central Ry. (See Penna. (R. R.)
North'n Pacific R. R. 4-8½ g. 1,193 m. 104 lo. 3,089 c.
Herman Haupt, Gen. Man....St. Paul, Minn.
John H. Ames, Pur. Agt....St. Paul, Minn.
Geo. W. Cross, Supt. Trans....St. Paul, Minn.
Geo. W. Cushing, Supt. M. P. & M....St. Paul, Minn.
W. J. Brokaw, M. M....Forsyth, Mon.
Frank Howard, M. C. B....St. Paul, Minn.
St. P. & Minn. Divs.: B. McHugh, Supt., do.
H. J. Small, Supt. Mach....Brainerd, Minn.
Dakota Div.: J. T. Odell, Supt....Fargo, Dak.
A. Rupert, M. M....Fargo, Dak.
Mo. Div.: D. R. Taylor, Supt....Mandan, Dak.
E. F. Doran, M. M....Mandan, Dak.
Yell'st'e Div.: S. R. Ainslie, Supt....Glendive, Mont.
S. L. Bean, M. M.... do.
(2) Western Div.: J. W. Sprague, Gen Supt.; and
Otis Sprague, Supt....New Tacoma, W. T.
H. D. Sanborn, Pur. Agt....Portland, Ore.
F. C. Ford, M. M....New Tacoma, W. T.
S. Wishart, M. C. B....New Tacoma, W. T.
Pend d'Ore Div.: H. W. Fairweather, Supt.; and
J. F. Curtis, M. M....Ainsworth, W. T.
Northern & North-W'n Ry. 5-6 & 4-8½ g. 50 lo. 1,033 c.
James Webster, Supt....Toronto, Can.
C. W. Postlethwaite, Pur. Agt....Toronto, Can.
P. Clarke, M. M....Toronto, Can.

O

Ogdensburg & Lake Champlain R. R.
4-8½ g. 122 m. 33 lo. 1,160 cars.
A. A. Gaddis, Gen. Man....Malone, N. Y.
Abr. Klohs, Supt. & M. M....Malone, N. Y.
Ohio Central R. R. 4-8½ g. 230 m. 30 lo. 3,201 cars.
John E. Martin, Gen. Man....Toledo, O.
W. H. Vandegrift, Supt....Toledo, O.
F. W. Stewart, Pur. Agt....Toledo, O.
J. B. Morgan, M. M. & C. B....Bucyrus, O.
Ohio Southern. 4-8½ g. 119 m. 19 lo. 623 cars.
D. R. Ennis, Supt....Springfield, O.
H. C. Norton, Pur. Agt....Indianapolis, Ind.
W. B. Warren, M. M....Springfield, O.
Ohio & Mississippi Ry. 4-9 g. 615 m. 112 lo. 2,501 cars.
W. W. Peabody, Gen. Supt....Cincinnati, O.
G. E. Atwood, Pur. Agt....Cincinnati, O.
J. H. Setchel, Gen. M. M....Cincinnati, O.
Cin. Div.: C. B. Cole, Supt....Seymour, Ind.
John Thumser, M. M....Seymour, Ind.
J. P. Coulter, M. C. B....Aurora, Ind.
Arthur Donaldson, M. M....Vincennes, Ind.
St. L. & Sp. Div.: C. M. Stanton, Supt....St. Louis, Mo.
J. W. Stokes, M. M. (Spring. Div.)....Pana, Ill.
Louisv. Div.: C. B. Cole, Supt....Louisville, Ky.
Oil City & Ridgway R. R. 4-8½ g. 6 m. 1 lo. 43 cars.
A. F. Kent, Gen. Man....Oil City, Pa.
Old Colony R. R. 4-8½ g. 463 m. 110 lo. 2,862 cars.
J. R. Kendrick, Gen. Supt....Boston, Mass.
Main Li. Div.: J. H. French, Supt....Boston, Mass.
R. W. Husted, Pur. Agt....Boston, Mass.
J. K. Taylor, M. M....Boston, Mass.
A. Gleason, M. C. B....Boston, Mass.
Cape Cod Div.: C. H. Nye, Supt....Hyannis, Mass.
No. Div.: S. A. Webber, Supt....Fitchburg, Mass.
George W. Reynolds, M. M....Taunton, Mass.
Sam. Stevens, M. C. B....Taunton, Mass
Olean, Bradford & Warren: Bradford; Kinzua; and
Kendall & Eldred R. Rs. 3 g. 38 m. 9 lo. 222 cars.
J. W. Watson, Gen. Supt....Olean, N. Y.
J. H. Poole, Pur. Agt....Buffalo, N. Y.
Charles Turner, M. M. & C. B....Olean, N. Y.
Oregon Ry. & Nav. Co. 4 8-½ g. 225 m. 31 lo. 930 cars.
C. H. Prescott, Manager....Portland, Ore.
J. M. Buckley, Asst. Man. & Act. Supt. do.
K Von Oterendorf, Supt. (O. Div.)....S. F'cisco, Cal.
J. M. Drake, Pur. Agt....Portland, Ore.
C. C. Hobart, Gen. M. M....The Dalles, Ore.
Chas. A. Phipps, M. C. B....The Dalles, Ore.
N. G. Div.: Wm. Reed, Man....Portland, Ore.
James Walch, M. M....Portland, Ore.
Oregon & California R. R. 4-8½ g. 200 m. 14 lo. 286 c.
R. Koehler, Act. Man....Portland, Ore.
J. Brandt, Gen. Supt....Portland, Ore.
A. Brandt, M. M....Portland, Ore.
Owensboro & Nashville R. R. 5 g. 35 m.
R. S. Bevier, Act. Supt....Owensboro, Ky.
H. M. Gable, M. M. & C. B....Owensboro, Ky.

P

Paducah & Elizabetht'n R.R. 5 g. 186 m. 19 lo. 536 c.
Robert Meek, Gen. Supt....Elizabethtown, Ky.
W. D. Robb, M. M. & C. B....Elizabethtown, Ky.
Painesville & Youngstown R. R. 3 g. 65 m. 7 lo. 319 c.
R. K. Paige, Rec. & Man....Pittsburg, Pa.
J. A. Newcome, Supt....Painesville, O.
J. H. Jones, M. M....Painesville, O.
Panama R. R. 5 g. 58 m. 14 lo. 534 cars.
H. A. Woods, Supt....Aspinwall, U. S. Col.
E. Z. Penfield, Pur. Agt....New York, N. Y.
Thomas S. O'Brien, M. M....Aspinwall, U. S. Col.
Parker & Karns City; and
Karns City & Butler R. Rs. 3 g. 27 m. 5 lo. 84 cars.
W. C. Moberly, Gen. Supt....Parker City, Pa.
Philip Davies, M. M....Parker City, Pa.
Wm. Wolford, M. C. B....Parker City, Pa.

Passumpsic R. R. 4-8½ g. 165 m. 28 lo. 105 cars.
E. Raymond, Pres. & Pur. Agt....Boston, Mass.
H. E. Folsom, Supt....Lyndonville, Vt.
L. L. Brigham, M. M....Lyndonville, Vt.
L. F. Woodard, M. C. B....Lyndonville, Vt.
Peach Bottom R. R. 3 g. 55 m. 6 lo. 52 cars.
Samuel Dickey, Gen. Man....York, Pa.
G. R. Dickey, Supt. & Pur. Agt....York, Pa.
E. H. Williams, M. C. B....York, Pa.
E. Div.: S. Dickey, Supt....Oxford, Pa.
W. P. Kirk, M. M....Oxford, Pa.
Pennsylvania Co.'s (9) Roads
4-9 g. 2,838 m. 817 lo. 29,432 cars.
Wm. Mullins, Gen. Pur. Agt....Pittsburg, Pa.
Joseph Wood, Supt. M. P....Fort Wayne, Ind.
(1) Clev. & Pittsb'g R. R. 4-9 g. 224 m. 97 lo. 3,336 c.
R. V. Smith, Asst. Gen. Man....Cleveland, O.
Philip Bruner, Supt....Wellsville, O.
W. F. Beardsley, Mast. of Mach....Cleveland, O.
(2 & 3) Erie & Ashtabula Rds. 178 m. 29 lo. 1,340 c.
John M. Kimball, Supt....Youngstown, O.
J. A. Wood, For. Shops....Erie, Pa.
(4) Indianap. & Vincennes Rd. 117 m. 11 lo. 303 cars.
Jas. J. Turner, Supt....Indianapolis, Ind.
M. M.
(5) Jeffersonville, Madison & Indianapolis R. R.
4-9 g. 217 m. 47 lo. 784 cars.
E. W. McKenna, Supt....Louisville, Ky.
Wm. Swanston, M. M....Jeffersonville, Ind.
Edw. Austin, M. C. B....Jeffersonville, Ind.
(6) Northwestern Ohio Ry. 4-9 g. 79 m.
J. S. Morris, Supt....Toledo, O.
(7) Pittsburg, Ft. Wayne & Chicago Ry.
4-9 g. 468 m. 278 lo. 6,782 cars.
E'n Div.: A. B. Starr, Supt....Allegheny, Pa.
Geo. J. Parkin, M. M....Allegheny, Pa.
W'n Div.: C. D. Law, Supt....Ft. Wayne, Ind.
F. D. Casanave, M. M....Ft. Wayne, Ind.
(8) Pittsburg, Cincinnati & St. Louis Ry.
4-9 g. 1,172 m. 336 lo. 6,482 cars.
Jas. McCrea, Gen. Supt....Columbus, O.
R. H. Soule, Supt. M. P. & M....Columbus, O.
P. & Col. Div.: E. B. Taylor, Supt....Dennison, O.
C. B. Street, M. M....Dennison, O.
A. K. Mansfield, M. C. B....Steubenville, O.
Robt. Curtis, M. M....Columbus, O.
Thos. Chamberlain, M. C. B....Columbus, O.
C. & M. V. Div.: W. F. Black, Supt....Zanesville, O.
Leroy Kells, M. M....Lancaster, O.
Daniel Jewell, M. C. B....Lancaster, O.
Li. Mi. Div.: Ralph Peters, Supt....Cincinnati, O.
Leroy Kells, M. M....Cincinnati, O.
Jos. Underwood, Gen. Foreman....Cincinnati, O.
Ind. Divs.: J. F. Miller, Supt....Richmond, Ind.
W. W. Reynolds, M. M....Logansport, Ind.
Chas. H. Starr, M. C. B....Logansport, Ind.
M. J. Rogers, M. M....Indianapolis, Ind.
Chi. Div.: Chas. Watts, Supt....Logansport, Ind.
(9) Terre Haute & Indianapolis R. R.
4-9 g. 374 m. 83 lo. 2,868 cars.
Joseph Hill, Gen. Supt....St. Louis, Mo.
C. R. Peddle, P. Agt....St. Louis, Mo.
Geo. H. Prescott, S. M. P. & M....Terre Haute, Ind.
E. D. Carter, M. C. B....Terre Haute, Ind.
Clinton Idler, M. M....Indianapolis, Ind.
Chas. Butler, M. M....Effingham, Ill.
A. W. Quakenbush, M. M....Logansport, Ind.
Pennsylvania R. R. Co.'s Roads. (7 Gen. Divs.)
4-9 g. 2,704 m. 1,271 loco. 51,894 cars.
Chas. E. Pugh, Gen. Man....Philadelphia, Pa.
Enoch Lewis, Pur. Agt....Philadelphia, Pa.
John Reilly, Supt. Trans....Philadelphia, Pa.
T. N. Ely, Supt. Mo. Po. (4 Gen. Divs.)....Altoona, Pa.
Frank L. Sheppard, Supt. M. P....Altoona, Pa.
(1) Pennsylvania R. R. Divs.
4-9 g. 1,105 m. 627 lo. 35,583 cars.
S. M. Prevost, Gen. Supt....Altoona, Pa.
Phila. Div.: Wm. J. Latta, Supt....Philadelphia, Pa.
H. D. Garrett, M. M....W. Philadelphia, Pa.
I. W. Van Houten, M. C. B....W. Phila., Pa.
Mid. Div.: H. H. Carter, Supt....Harrisburg, Pa.
E. L. Caum, M. M....Harrisburg, Pa.
Samuel W. Myers, M. C. B....Harrisburg, Pa.
Alt'a Div.: Jas. Reed, Supt....Altoona, Pa.
G. W. Strattan, M. M....Altoona, Pa.
John P. Levan, M. C. B....Altoona, Pa.
Pitts. Div.: Robert Pitcairn, Supt....Pittsburg, Pa.
D. O. Shaver, M. M....Pittsburg, Pa.
J. G. Stewart, M. C. B....Pittsburg, Pa.
W. Pa. Div.: A. P. Kirtland, Supt....Blairsville, Pa.
Wm. B. Norris, M. M....Blairsville, Pa.
M. H. Fails, M. C. B....Blairsville, Pa.
Fred. Div.: J. B. Hutchinson, Supt....York, Pa.
Tyrone Div.: S. S. Blair, Supt....Tyrone, Pa.
Lew. Div.: Wm. M. Phillips, Supt....Lewistown, Pa.
Bed. Div.: Thos. A. Roberts, Supt....Bedford, Pa.
Monong. Div.: David M. Watt, Supt....Pittsburg, Pa.
Wm. Lininger, M. M....Pittsburg, Pa.
(2) United R. Rs. of N. J. Divs. 414 m. 257 lo. 4,668 c.
F. Wolcott Jackson, Gen. St....Jersey City, N. J.
N.Y. Div.: Robt. E. Pettit, Supt....Jersey City, N. J.
H. S. Hayward, St. M. P....Jersey City, N. J.
David H. Baker, M. C. B....Jersey City, N. J.
L. A. Bosdevex, M. M....Jersey City, N. J.
E. F. Bosdevex, M. C. B....Jersey City, N. J.
Belv. Div.: J. A. Anderson, Supt....Lambertv., N. J.
R. McDowell, M. M....Lambertville, N. J.
Amboy Div.: J. S. Buckalew, Supt....Camden, N. J.
Thos. Kerr, M. M....So. Amboy, N. J.
P. S. Bogart, M. C. B....So. Amboy, N. J.
(3) West Jersey R. R. 4-9 g. 163 m. 22 lo. 342 cars.
Joseph Crawford, Supt....Camden, N. J.
W. McAllister, M. M....Camden, N. J.
C. C. Williams, M. C. B....Camden, N. J.
(4) Phila., Wilm. & Balt. R.R. 212 m. 86 lo. 1,488 c.
H. F. Kenney, Gen. Supt....Philadelphia, Pa.
S. A. Hodgman, M. M....Wilmington, Del.
Wm. Lundgren, M. C. B....Wilmington, Del.
Cen. Div.: L. K. Lodge, Supt....Philadelphia, Pa.
S. D. Danfield, M. M. & C. B....Chester, Pa.
Del. Div.: I. N. Mills, Supt....Philadelphia, Pa.
(5) Phila. & Erie R. R. Divs.: 376 m. 117 lo. 3,481 c.
R. Neilson, Gen. Supt....Williamsport, Pa.
A. O. Dayton, Supt. Mo. Po....Williamsport, Pa.
E'n. Div.: Thos. Gucker, Supt....Williamsport, Pa.
Sun. H. & W. Div: A. Waters, Supt.; and
W. F. Beardsley, M. M....Sunbury, Pa.
Mid. Div.: E. B. Westfall, Supt....Renova, Pa.
Wm. L. Holman, M. M....Renova, Pa.
West'n Div.: J. W. Reynolds, Supt....Erie, Pa.
W. T. Smith, M. M....Erie, Pa.
(6) Northern Central Ry. 4-9 g. 326 m. 152 lo. 6,163 c.
A. W. Sumner, Pur. Agt....Baltimore, Md.
Susq., Shamokin, Elmira & Canadaigua Divs.:
Robert Neilson, Gen. Supt....Williamsport, Pa.
A. O. Dayton, Supt. M. P....Williamsport, Pa.
Susq. Div.: Thos. Gucker, Supt....Williamsport, Pa.
Sham. Div.: Supt....Sunbury, Pa.
Elm. & Can. Divs.: S. Meade, Supt....Elmira, N. Y.
Jas. Strode, M. M....Elmira, N. Y.
J. C. Dyott, M. C. B....Elmira, N. Y.
Baltimore Divs. of Northern Central; and
(7) Baltimore & Potomac R. R. 128 m. 29 lo. 356 c.
G. C. Wilkins, Supt....Baltimore, Md.
A. W. Sumner, Pur. Agt....Baltimore, Md.
J. M. Wallis, Supt. Mo. Po....Baltimore, Md.
J. M. Coale, M. M....Baltimore, Md.
G. W. Demarest, M. C. B....Baltimore, Md.
Penn. Coal Co.'s R. R. 4-3 g. 67 m. 23 eng. 2,871 c.
J. B. Smith, Gen. Supt....Dunmore, Pa.
And. Crane, M. M....Dunmore, Pa.
Geo. W. Simpson, M. C. B....Dunmore, Pa.
Pennsylvania & Erie R. R.—Early Branch.
C. R. Early, Gen. Supt....Ridgeway, Pa.
Pensacola & Perdido R. R. 6 g. 8 m. 5 lo. 73 cars.
B. F. Simmons, Pr. & Supt....Pensacola, Fla.
H. W. Simmons, Pur. Agt....Pensacola, Fla.
R. G. Nicholl, M. M. & C. B....Pensacola, Fla.
Peoria, Decatur & Evansville Ry.
4-8½ g. 215 m. 12 lo. 725 cars.
G. L. Bradbury, Gen. Man....Peoria, Ill.
Supt. & Pur. Agt....Peoria, Ill.
P. Reilly, M. M....Mattoon, Ill.
Peoria & Farmington R. R. 4-8½ g. 25 m. 2 lo. 25 c.
D. P. Phelps, Gen. Man....Monmouth, Ill.
John F. Wallace, Supt....Farmington, Ill.
Peoria & Pekin Union Ry. 4-8½ g. 20 m. 12 lo. 100 c.
Thos. B. Burnett, Gen. Supt. & P. A....Peoria, Ill.
R. F. Hurd, M. M. & C. B....Peoria, Ill.

Perkiomen R. R. 4-8½ gauge 39 miles.
D. B. Clack, Supt....Norristown, Pa.
Petersburg R. R. 4-8½ g. 64 m. 10 lo. 131 cars.
R. M. Sully, Gen. Supt....Petersburg, Va.
L. E. Clark, Pur. Agt....Petersburg, Va.
R. B. Andrews, M. M....Petersburg, Va.
J. W. Fleming, M. C. B....Petersburg, Va.
Phila., Wilmington & Balt. R. R. (See Penna. R. R.)
Phila. & Atlantic City Ry. 3-6 g. 65 m. 11 lo. 134 cars.
F. S. Urie, Supt. & Pur. Agt....Philadelphia, Pa.
J. W. Wright, M. M....Camden, N. J.
E. Lippincott, M. C. B....Camden, N. J.
Phila. & Reading. 4-8½ g. 869 m. 516 lo. 21,960 cars.
John E. Wootten, Gen. Man....Philadelphia, Pa.
W. S. Wilson, Pur. Agt....Philadelphia, Pa.
Geo. Eltz, Supt. Trans....Reading, Pa.
L. B. Paxson, Eng. of Mach....Reading, Pa.
John H. Rankin, M. C. B....Reading, Pa.
No. Pa. & B. Brk. Div.: I. A. Sweigard, Supt., and
Jackson Richards, M. M....Philadelphia, Pa.
C. & W. Br.: D. C. Reinhart, Sup....Williamsport, Pa.
W. H. Ellis, M. M....Catawissa, Pa.
C. D. Ellis, M. C. B....Catawissa, Pa.
Leb. & Tr. Br.: H. W. Tracy, Supt....Pine Grove, Pa.
Coal Br.: J. H. Olhausen, Supt....Mahony Plane, Pa.
R. & C. Br.: A. M. Wilson, Supt....Columbia, Pa.
P. N. & N. Y. Rd.: W. M. Geary, S....Morristown, Pa.
S. & Le. Rd.: E. Dale, Supt....Reading, Pa.
Pittsburg, Bradford & Buffalo Ry. 3 g. 31 m. 4 lo. 79c.
J. M. Dickey, Gen. Man....Foxburg, Pa.
M. Mandeville, Supt....Foxburg, Pa.
Pittsburg, Cincinnati & St. Louis Ry. (See Penna. Co.)
Pittsburg, Ft. Wayne & Chicago Ry. (See Penna. Co.)
Pittsburg Southern Ry. 3 g. 38 m. 4 lo. 64 cars.
M. D. Hays, Supt. & P. A....Pittsburg, Pa.
W. S. Marshall, M. M....Pittsburg, Pa.
E. B. Gosline, M. C. B....Pittsburg, Pa.
Pitts. & Castle Shannon R. R. 3-4 g. 9 m. 5 lo. 388 c.
James M. Bailey, Gen. Supt....Pittsburg, Pa.
Holmes Ward, M. M....Castle Shannon, Pa.
Wm. E. Long, M. C. B....Pittsburg, Pa.
Pitts. & Lake Erie R. R. 4-8¾ g. 70 m. 30 lo. 1,688 c.
W. C. Quincy, Gen. Man....Pittsburg, Pa.
R. W. Jones, Mast. Trans....Pittsburg, Pa.
S. W. Haines, M. M....Pittsburg, Pa.
Pittsburg & Western R. R. 3 g. 47 m. 2 lo. 76 cars.
E. K. Hyndman, Gen. Man....Pittsburg, Pa.
C. P. Ford, Pur. Agt....Allegheny, Pa.
W. L. Hofecker, M. M....Zelienople, Pa.
Port Huron & No.-Western Ry. 3 g. 105 m. 4 lo. 66 c.
H. McMorran, G. Man. & P. A....Port Huron, Mich.
I. R. Wadsworth, Supt....Port Huron, Mich.
Chas. Deifenbaugh, M. M....Port Huron, Mich.
Benj. Hillier, M. C. B....Port Huron, Mich.
Port Royal & Augusta Ry. 5 g. 112 m. 13 lo. 235 c.
J. N. Bass, Gen. Supt....Augusta, Ga.
John McCann, M. M....Augusta, Ga.
J. H. Milton, M. C. B....Augusta, Ga.
Portland & Ogdensburg. 4-8½ g. 114 m. 9 lo. 289 c.
J. Hamilton, Gen. Supt. & P. A....Portland, Me.
Geo. H. Poor, M. M....Portland, Me.
W. G. Brewer, M. C. B....Portland, Me.
Portland & Rochester R. R. 4-8½ g. 52 m. 7 lo. 230 c.
J. W. Peters, Supt. & Pur Agt....Portland, Me.
E. H. C. Tompson, For. of Mach....Portland, Me.
David Dow, For. of Car Repairs....Portland, Me.
Potomac, Fred.'g & Pied. R. R 3 g. 38 m 2 lo. 32 c.
W. M. Crafton, Supt....Fredericksburg, Va.
Pough., Hart. & Bos. R. R. 4-8½ g. 45 m. 4 lo. 64 c.
J. A. Perkins, Supt....Poughkeepsie, N. Y.
John L. Driscoll, M. M....Poughkeepsie, N. Y.
Prince Edward Island Ry. 3-6 g. 199 m. 17 lo. 280 c.
L. B. Archibald, Supt. & Pur. Agt.;
Jos. Unsworth, M. Supt. & Storekeeper; and
D. M. Fraser, M. C. B....Charlottetown, P. E. I.
Prov., Warren & Bristol R. R. 4-8½ g. 19 m. 5 lo. 38 c.
Waterman Stone, Supt....Providence, R. I.
Rufus Smith, M. M. & C. B....Bristol, R. I.
Prov. & Springfield R. R. 4-8½ g. 23 m. 3 lo. 83 c.
Wm. Tinkham, Gen. Man....Providence, R. I.
G. T. Richardson, M. M....Providence, R. I.
Prov. & Worcester. 4-8½ g. 66 m. 30 lo. 858 c.
W. E. Chamberlain, Supt....Providence, R. I.
A. Griggs, Supt. L. & C. D....Providence, R. I.
Pullman's Palace Car Co. 472 passenger cars.
A. B. Pullman, 2d V.-Pr. & G. M....Chicago, Ill.
Geo. F. Brown, Gen. Supt....Chicago, Ill.
Wm. A. Angell, Pur. Agt....Chicago, Ill.
S. W. Bretzfield, Asst. Pur. Agt....New York, N.Y.
A. Rapp, Man. (Chicago Works)....Chicago, Ill.
H. L. Spaulding, Man. (Det Shops)....Detroit, Mich.
E. A. Benson, Supt. Shops....St. Louis, Mo.

Q

Quebec Central Ry. 4-8½ g. 139 m. 3 lo 79 cars.
A. Steele, Supt....Sherbrooke, Que.
R. D. Morkill, Pur. Agt....Sherbrooke, P. Q.
Jas. Seiveright, M. M....Sherbrooke, P. Q.
Quebec & Lake St. John Ry. 4-8½ g. 24 m. 3 lo. 43 c.
J. G. Scott, Manager....Quebec, Can.
Frank Fournier, Supt....St. Raymond, P. Q.
John T. Eames, M. M....St. Raymond, P. Q.

R

Raleigh & Augusta Air-Line; Carolina Central;
Raleigh & Gaston R. Rs. 4-8½ g. 436 m. 48 lo. 978 c.
John C. Winder, Gen. Man....Raleigh, N. C.
Raleigh Rds. 4-8½ g. 194 m. 22 lo. 589 cars.
B. R. Harding, Supt. of Mach....Raleigh, N. C.
R. T. Bishop, M. C. B....Raleigh, N. C.
Carolina Cen. R.R. 4-8½ g. 242 m. 26 lo. 389 c.
V. Q. Johnson, Gen. Supt....Wilmington, N. C.
C. H. Roberts, Pur. Agt....Wilmington, N. C.
James Maglenn, M. of Mach....Laurinburg, N. C.
S. R. Ethridge, M. C. B....Laurinburg, N. C.
Rensselaer & Saratoga R.R. (See Del. & Hud. Can. Co.)
Rhinebeck & Connecticut. 4-8½ g. 42 m. 5 lo. 85 c.
J. H. Jones, Gen. Supt....Rondout, N. Y.
John Dykeman, M. M....Rondout, N. Y.
John H. Decker, M. C. B....Rondout, N. Y.
Richmond, Fredericksburg & Potomac R. R.
4-8½ g. 83 m. 14 lo. 165 cars.
E. T. D. Myers, Gen. Supt....Richmond, Va.
T. L. Courtney, Pur. Agt....Richmond, Va.
H. Khun, M. M....Richmond, Va.
W. H. Trainham, M. C. B....Richmond, Va.
Richmond & Alleghany R.R. 4-9 g. 250 m. 18 lo. 771c.
Gen. Man....Richmond, Va.
Geo. W. Agee, Supt....Richmond, Va.
J. P. Williams, Pur. Agt....Richmond, Va.
Geo. D. Harris, M. M. & C. B....Richmond, Va.
Richmond & Danville R. R. Co.'s Roads.
1,655 miles 217 loco. 3,616 cars.
T. M. R. Talcott, Gen. Man....Richmond, Va.
J. P. Minetree, Pur. Agt....Richmond, Va.
R. D. Wade, Supt. Mo. Po....Richmond, Va.
(1) Rich. & Dan. R. R. 5 g. 764 m. 131 lo. 2,480 cars.
Peyton Randolph, As. G. Man....Richmond, Va.
Rich. & Dan. Div.: 5 g. 255 m. 79 lo. 1,797 c.
Wm. H. Green, Supt....Richmond, Va.
T. W. Gentry, M. M....Richmond, Va.
J. B. Vaughan, For. Car Sh....Richmond, Va.
North Carolina Div. 5 g. 223 m. 22 lo. 268 cars.
A. B. Andrews, Supt....Raleigh, N. C.
W. H. Turrentine, M. M....Comp'y's Shops, N. C.
J. C. Holt, For. Car Sh....Comp'y's Shops, N. C.
Atlanta & Char. Air Line. 5 g. 268m. 31 lo. 415 c.
Narrow-Gauge Branches. 3 g. 80 m. 5 lo. 37 c.
I. Y. Sage, Supt....Atlanta, Ga.
W. A. Walden, Act. M. M....Atlanta, Ga.
Z. T. Smith, For. Car Sh....Atlanta, Ga.
(2) Charlotte, Col. & Aug. R. R. 5g. 239 m. 22 lo. 287 c.
G. R. Talcott, Supt....Columbia, S. C.
J. H. Green, M. M. (2 roads)....Columbia, S. C.
J. H. Perkins, For. Car Sh....Columbia, S. C.
(3) Columbia & Greenville R. R. 5 g. 297 m. 22 l. 218 c.
J. W. Fry, Supt....Columbia, S. C.
J. O. Meredith, For. R. & C. Rep.... do.
(4) Virginia Midland Ry. 4-8½ g. 353 m. 41 lo. 631 c.
W. M. S. Dunn, Eng. & Supt....Alexandria, Va.
J. E. Waddey, M. of M....Alexandria, Va.
J. T. Nails, M. C. B....Alexandria, Va.
Richmond & Petersburg R.R. 4-8½ g. 25 m. 8 lo. 130 c.
J. R. Kenly, Supt....Richmond, Va.
John O'Brien, M. M....Richmond, Va.
Rio Grande R. R. 3-6 g. 22 m. 3 lo. 39 cars.
M. J. Gomila, Rec. & Gen. Man....Brownsville, Tex.
G. W. Rendall, M. M....Brownsville, Tex.
M. Markwood, M. C. B....Brownsville, Tex.

Rochester & Pittsb'g. R.R. 4-8½ g. 108 m. 11 lo. 612 c
Geo. E. Merchant, Gen. Man...Rochester N. Y.
J. P. Hovey, M. M...Rochester, N. Y.
Rock Island & Mercer County R. R., and
Rock I'd & Peoria Ry. 4-8½ g. 113 m. 12 lo. 357 c.
R. R. Cable, V.-P. & Gen. Supt..Rock Island, Ill.
R. I. & P. Ry.: H. B. Ludlow, Supt. & P. A. do.
Joseph Elder, M. M...Peoria, Ill.
R. I. & M. C. Rd.: B. T. Cable, Supt. R'k Island, Ill.
J. Parks, M. M...Rock Island, Ill.
Rome (Ga.) R. R. 5 g. 20 m. 2 lo. 13 cars.
Eben Hillyer, Supt...Rome, Ga.
O. W. Harbin, M. M. & C. B...Rome, Ga.
Rome, Watertown & Ogdensburg R. R.
4-8½ g. 409 m. 51 lo. 1,248 cars.
E. A. Van Horne, Gen. Supt...Oswego, N. Y.
Geo. W. B. Cushing, Pur. Agt. New York, N. Y.
Geo. H. Haselton, M. M. & C. B..Oswego, N. Y.
Rumford Falls & Buckfield R.R. 4-8½ g. 29 m. 2 l. 42 c.
O. Hayford, Supt...Canton, Me.
O. Spaulding, Pur. Agt...Buckfield, Me.
E. R. Oldham, M. M...Buckfield, Me.

S

Sabine & East Texas Ry. 4-8½ g. 25 m. 5 lo. 306 c.
J. B. Morford, Gen. Supt...Beaumont, Tex.
R. H. Cousins, Supt...Beaumont, Tex
Chas. Bunn, M. M...Beaumont, Tex
Sacramento & Placerville R. R. 4-8½ g. 49 m. 3 lo. 68 c.
J. B. Wright, Supt. & P. A...Sacramento, Cal.
A. J. Stevens M. M...Sacramento, Cal.
Benj. Welch, M. C. B...Sacramento, Cal.
Saginaw Bay & Northw'n R. R. 4-8½ g. 20 miles.
E. W. Gerrish, Supt...Pinconning, Mich.
F. T. Lillot, Pur. Agt...Pinconning, Mich
And. Miller, M. M...Pinconning, Mich.
Saginaw Valley & St. Louis R. R. 4-8½ g. 35 m. 4 l. 64 c
N. W. Merrill, Supt...Saginaw, Mich.
Allan Bourn, Pur. Agt...Detroit, Mich.
Geo. C. Watrous, M. M...Iona, Mich.
San Francisco & No. Pac. 4-8½ g. 112 m. 11 lo. 244 c.
Arthur Hughes, Gen. Man..San Francisco, Cal.
H. C. Whiting, Supt...Petaluma, Cal.
P. E. Dougherty, Pur. Agt San Francisco, Cal.
Ed. Reynolds, M. M...Donahue, Cal.
M. C. B...Donahue, Cal.
San Luis Obispo & Santa Maria Val. R. R. 3 g. 11 m.
C. A. Haskin, Supt. & P. Agt. San Luis Obispo, Cal.
W. H. Masterman, M. M. San Luis Obispo, Cal.
J. M. Vincent, M. C. B...San Luis Obispo, Cal.
Savannah, Florida & W'n Ry. 5 g. 422 m. 50 lo. 695 c.
H. S. Haines, Gen. Man...Savannah, Ga.
R. G. Fleming, Supt...Savannah, Ga.
A. A. Aveilhé, Pur. Agt...Savannah, Ga.
James D. Hollister, M. of Mach..Savannah, Ga.
Jos. W. Rowell, For. Car Dept Savannah, Ga.
Sav., Griffin & No. Ala. R. R. Op. by Central (Ga.).
Schuylkill & Lehigh R. R. 4-8½ g. 43 miles.
Elbridge Dale, Supt...Reading, Pa.
Scoharie Valley R. R. (See Middleburg & Sch.)
Scioto Valley R. R. 4-8½ g. 131 m. 15 lo. 460 cars.
Geo. Skinner, Supt...Columbus, O
R. Bromley, M. M. & P. A...Portsmouth, O.
Seaboard & Roanoke R. R. 4-8½ g. 80 m. 21 lo. 381 c.
E. G. Ghio, Mast. of Trans...Portsmouth, Va.
M. M. Pendleton, S. M. P. & M. Portsmouth, Va.
Shenandoah Valley R. R. 4-8½ g. 143 m. 15 lo. 104 c.
Henry Fink, Gen. Man...Lynchburg, Va.
J. H. Sands, Supt...Hagerstown, Md.
W. C. De Armond, Pur. Agt..Philadelphia, Pa.
Chas. Blackwell, Supt. of M. P..Roanoke, Va..
Jno. McCallister, M. M..Shepherdstown, W. Va.
H. Groves, M. C. B...Shepherdstown, W. Va.
Shenango & Allegheny R R 4-9½ g. 47 m. 6 lo. 156 c
J. T. Blair, G. Supt. & Pur. Agt. Greenville, Pa.
Edw. Richardson, M. M. & C. B. Greenville, Pa.
Shepaug R. R. 4-8½ g. 38 m. 3 lo. 27 cars.
Edwin McNeill, Supt...Litchfield, Ct.
C. M. Allen, M. M...Litchfield, Ct.
Ship Is., Ripley & Ky. R. R. 3 g. 25 m. 2 lo. 23 cars.
C. L. Harris, Supt. & Pur. Agt...Ripley, Miss.
W. H. Phelps, M. M...Ripley, Miss
Sioux City & Pacific R. R. 4-8½ g. 427 m. 21 lo. 594 c.
P. E. Hall, Gen. Man. & P. A. Cedar Rapids, Ia.
C. M. Lawler, Gen. Supt...Cedar Rapids, Ia.
J. S. Wattles, Supt...Missouri Valley, Ia.
C. F. McCoy, Asst. Supt...Blair, Neb.
S. A. Teal, M. M...Missouri Valley, Ia.
W. H. Ramseyer, M. C. B. do.
Sodus Bay & Southern Ry. 4-8½ g. 24 m. 3 lo. 40 c.
S. B. Stuart, Supt...Sodus Point, N. Y.
S. B. Stuart, Pur. Agt...Sodus Point, N. Y.
W. H. Cook, M. C. B...Sodus Point, N. Y.
South Carolina Ry. 5 g. 243 m. 42 lo. 685 cars.
John B. Peck, Gen. Man...Charleston, S. C.
S. B. Pickens, Pur. Agt...Charleston, S. C.
P. J. Cochrane, Mast. of Mach. Charleston, S. C.
Geo. H. Gramling, M. C. B...Charleston, S. C.
South-Eastern Ry. 4-8½ g. 260 m. 26 lo. 826 cars.
Bradley Barlow, Gen. Man...Montreal, Can
T. A. McKinnon, Asst. Man...Montreal, Can.
H. A. Alden, Supt...Richford, Vt.
A. G. Eastman, M. M...Richford, Vt.
South Florida R. R. 3 gauge 40 m. 4 lo. 20 cars.
B. R. Swoope, Supt. & P. A...Sanford, Fla.
C. C. Haskell, Pur. Agt...Sanford, Fla.
J. A. Campbell, M. M...Sanford, Fla.
A. D. Stentiford, M. C. B...Sanford, Fla.
South Mountain R. R. 4-8½ g. 18 m. 4 lo. 22 c.
W. H. Woodward, Supt. Pine G've Furnace, Pa.
South Pacific Coast R. R. 3 g. 81 m. 10 lo. 260 cars.
A. H. Fracker, Gen Supt..San Francisco, Cal.
G. H. Waggoner Pur. Agt..San Francisco, Cal.
E. L. Reese, M. M. & C B...Newark, Cal.
South-Western R R. (Ga.) (See Central of Ga.)
South-Western Ry. (Ky.) 4-8½ g. 4 m. 1 lo. 38 cars.
J. M. Wilson, Supt...Harrodsburg, Ky.
J. Tomlinson, Pur. Agt...Harrodsburg, Ky.
Southern Central R. R. 4-8½ g. 114 m. 16 lo. 447 c.
James G. Knapp, Supt...Auburn, N. Y.
H. D. Titus, Pur. Agt...Auburn, N. Y.
Chas. G. Brown, M. M...Auburn, N. Y.
H. Mooney, M. C. B...Auburn, N. Y.
Southern Maryland R. R. 4-9 g. 47 m.
Shields Burr, Supt...Brandywine, Md.
C. J. Royce, M. M...Brandywine, Md.
Southern Pacific R. R. 4-8½ g. 161 m. 29 lo. 728 c.
Northern Div. (For other Divs. see Cen. Pac.)
A. C. Bassett, Supt...San Francisco, Cal.
J. R. Watson, Pur. Agt...Sacramento, Cal.
J. T. Wilson, M. M...San Francisco, Cal.
F. N. Bellisle, M. C. B...San Francisco, Cal.
Springfield, Effingham & So.-Eastern and
Bloomfield Rys. 3 g. 89 m.
W. C. Lyon, Gen. Man...Robinson, Ill.
E. Pratt Buell, Pur. Agt...Effingham, Ill.
J. S. Pickering, M. M. & C. B...Effingham, Ill.

Spring Hill & Parrsboro Ry. 4-8½ g. 32 m. 1 lo. 64 c.
J. Killam, Supt...Parrsboro, N. S.
K. McKinnon, M. M...Parrsboro, N. S.
St. Croix & Penobscot R. R. 4-8½ g. 22 m. 4 lo. 195 c.
S. W. Haycock, Supt. & Pur. Agt. .Calais, Me.
G. H. Corsen, M. M...Milltown, Me.
H. C. Tincker, M. C. B...Milltown, Me.
St. John & Maine Ry. 4-8½ g. 92 m. 6 lo. 110 cars.
H. D. McLeod, Supt. & P. Agt...St. John, N. B.
A. McIntyre, M. M...St. John, N. B.
St. John's Ry 4-8½ g. 14½ m. 2 lo. 24 cars.
R. McLaughlin, Pr. & Supt. .Jacksonville, Fla.
Geo. Ferro, M. of Mach...Tocoi, Fla.
St. Johnsb'ry & Lake Champ 4-8½ g. 120 m 10 lo. 197 c.
A. B. Jewett, Supt. & P. A. .St. Johnsbury, Vt.
Geo. E. Howe, M. M. & C. B. St. Johnsbury, Vt.
St. Joseph & Des Moines R R. (See K. C., St. J. & C. B.)
St. Lawrence & Ottawa Ry. 4-8½ g. 59 m. 10 l. 146 c.
Archer Baker, Gen. Supt...Ottawa, Can.
alvin Dame, M. M. & C. B...Prescott, Can.
St. Louis, Alton & Terre Haute R. R.
Main Line. (See Ind. & St. L. Div.: Ohio Ry.)
St. Louis & Cairo Div.: 4-8½ g 123 m. 16 lo. 778 c.
G. W. Parker, Gen. Man...St. Louis, Mo.
J. L. Hinckley, Supt...Belleville, Ill.
A. M. De Clerq, M. M...St. Louis, Mo.
St. Louis Bridge Co. and Tunnel R. R.
4-8½ g. 17 m. 15 lo. 11 cars.
Wm. Taussig, Gen. Man...St. Louis, Mo.
A. W. Dickinson, Supt...St. Louis, Mo.
J. E. Williams, Jr., Pur. Agt...St. Louis, Mo.
H. M. Smith, M. M...St. Louis, Mo.
St. Louis Coal R. R. 4-8½ g. 28 m. 1 lo. 78 cars.
Jas. Prentice, Supt...Carbondale, Ill.
Jas. C. Bryden, Pur. Agt...St. Louis, Mo.
St. Louis, Ft. Scott & Wichita R. R. 4-8½ g. 20 miles.
F. Tiernan, V. P. & Gen. Man..Fort Scott, Kan.
J. D. Hill, Gen. Supt...Fort Scott, Kan.
S. C. Young, M. M...Ft. Scott, Kan.
A. A. Lydell, M. C. B...Ft. Scott, Kan.
St. L., Hannibal & Keokuk. 4-8½ g. 59 m. 1 lo. 23 c.
W. W. Walker, Supt...Hannibal, Mo.
Geo. Douglass, Pur. Agt...Hannibal, Mo.
St. Louis, Iron Mountain & Southern Ry. (1);
International & Great Northern R. R. (2); and
Texas & Pacific Ry. (3).
4-8½ g. 2,678 m. 302 lo. 6,119 cars.
C. Fleming, Supt...Marshall, Tex.
R. B. Lyle, Gen. Pur. Agt...St. Louis, Mo.
(1) St. L., I. Mt. & So. 4-8½ g. 710 m. 137 lo. 4,081 c.
Wm. Kerrigan, Supt...St. Louis, Mo.
O. A. Haynes, Supt. Mach...De Soto, Mo.
H. H. Sessions, M. C. B...St. Louis, Mo.
St. Louis Div.: J. J. Frey, Supt...St. Louis, Mo.
W. H. Harris, M. M...De Soto, Mo.
Ark. Div.: Wm. Kerrigan, Supt. Little Rock, Ark.
R. M. Richardson, M. M. & C. B. do.
(2) Inter. & Gr't No'n R. R. 4-8½ g. 776 m. 45 lo 932 c.
Jos. Herrin, Supt...Palestine, Tex.
R. H. Johnson, M. M...Palestine, Tex.
H. H. Sessions, M. C. B...Palestine, Tex.
(3) Texas & Pac. Ry. 4-8½ g. 1,030 m. 120 lo. 1,106 c.
E. L. Dudley, Supt...Marshall, Tex.
J. F. Sechler, Gen. M. M...Marshall, Tex.
H. H. Sessions, M. C. B...Marshall, Tex.
So'n Div.: Hugh Irvine, Supt...Longview, Tex.
W. Garrison, M. M...Marshall, Tex.
Tr. Con. Div.: J. L. Thorn, Supt. Texarkana, Ark.
Perry Stevens, M. M...Texarkana, Ark.
W'n Div.: Wm. Davis, Supt...Ft. Worth, Tex.
W. H. Reilly, Asst. G. M. M. Fort Worth, Tex.
St. L. Keokuk & No.-W'n. 4-8½ g. 187 m. 14 lo. 312 c.
Robt. Law, Gen. Supt. & P. Agt...Keokuk, Ia.
Wm. H. Bartlett, M. M...Keokuk, Ia.
St. L., Salem & Little Rock. 4-9 g. 69 m. 5 lo. 103 c.
H. A. Crawford, V. Pr. & P. A...St. Louis, Mo.
E. B. Sankey, Supt...Salem, Mo.
Thomas Everson, M. M...Steelville, Mo.
J. W. Houston, M. C. B...Steelville, Mo.
St. L., Van. & T. H. (See T. H. & I. Div. of Penna. Co.)
St. Louis & Cairo R. R. 3 g. 146 m. 22 lo. 708 cars.
Chas. Hamilton, Gen. Supt...St. Louis, Mo.
R. M. Pringle, M. M...East Carondelet, Ill.
St. L. & San Fran. Ry. 4-8½ g. 695 m. 71 lo. 2,490 c.
C. W. Rogers, 2d V. Pr & G. Man..St. Louis, Mo.
D. H. Nichols, Mast. Tran..No. Springfield, Mo.
A. G. Thompson, Pur. Agt...St. Louis, Mo.
M. Kearney, M. M. & C. B...St. Louis, Mo.
Mo. & Ark. Div.: W. A. Thoms, Supt. do.
Kan. Div.: J. R. Wentworth, Supt. Neodesha, Kan.
St. Martin's & Upham Ry. 4-8½ g. 30 m. 1 lo.
A. E. Killam, Manager...St. Martin's, N. B.
St. Paul, Minneapolis & Manitoba Ry.
4-8½ g. 1,050 m. 116 lo. 3,116 cars.
A. Manvel, Gen. Man...St. Paul, Minn.
S. R. Stimson, Gen. Supt...St. Paul, Minn.
E. B. Wakeman, Supt. Trans...St. Paul, Minn.
J. C. Morrison, Pur. Agt...St. Paul, Minn.
H. Middleton, M. M. & C. B...St. Paul, Minn.
Breck. Div.: A. Guthrie, Supt...St. Paul, Minn.
F. F. Div.: J. B. Rice, Supt...St. Paul, Minn.
No'n Div.: D. K. Smith, Supt...Crookston, Minn.
St. Paul & Duluth R. R. 4-8½ g. 196 m 24 lo. 580 c.
H. T. Stimson, Asst. Gen. Supt..St. Paul, Minn.
J. G. Callahan, Pur. Agt...St. Paul, Minn.
W. McFarland, M. M...St. Paul, Minn.
John Hill, M. C. B...St. Paul, Minn.
Sterling Mountain Ry. 6 g. 8 m. 2 lo. 145 cars.
J. C. Missimer, Supt...Sloatsburg, N. Y.
Syracuse, Binghamton & N. Y. R R. (See D. L. & W.)
Syracuse, Chenago & N. Y. 4-8½ g. 44 m. 4 lo. 60 c.
Albert Allen, Supt...Syracuse, N. Y.
George W. West, M. M...Syracuse, N. Y.
Wm. J. McMichael, M. C. B...Syracuse, N. Y.
Syracuse, Geneva & Corning; Corning, Cowanasque
& Antrim R. Rs. 4-8½ g. 121 m. 23 lo. 1,044 c.
A. H. Gorton, Supt...Corning, N. Y.
Andrew Beers, Pur. Agt...Corning, N. Y.
O. C. Patchell, M. M...Corning, N. Y.
C. J. Butler, M. C. B...Corning, N. Y.

T

Terre Haute & So.-Eastern Ry. 4-9 g. 40 miles.
Geo. Atherton, Supt...Terre Haute, Ind.
Texas-Mexican; and Mexican National Rys.
3 g. 333 m. 28 lo. 600 cars.
G. C. Gardner, Gen. Man...New York, N. Y.
R. C. Peebles, Supt...Mexico, Mex.
J. Dougherty, Pur. Agt...New York, N. Y.
S. T. Fuller, Gen. Supt...Corpus Christi, Tex.
P. J. Milan, M. M. & C. B. do.
Mex. Nat. Ry.: J. C. Monroe, M. M..Mexico, Mex
Texas Western Ry. 3 g. 42 m. 2 lo. 34 cars.
J. W. Goodwin, Supt...Houston, Tex.
T. F. Glispin, M. M...Houston, Tex.

Texas & New Orleans; Louisiana W'n R. Rs.
4-8½ g. 217 m. 25 lo. 900 c.
J. F. Crosby, Gen. Man...Houston, Tex.
P. B. Watson, Pur. Agt...Houston, Tex.
C. A. Burton, Supt...Houston, Tex.
D. C. Smith, M. M...Houston, Tex.
J. M. Mather, M. C. B...Houston, Tex.
Texas & Pacific. (See St. L., I. M. & So.)
Texas & St. Louis Ry. 3 g. 258 m. 15 lo. 280 cars.
J. B. Van Dyne, Gen. Supt...Tyler, Tex.
F. W. Paramore, Pur. Agt...St. Louis, Mo.
L. B. Fisher, Pur. Agt...Tyler, Texas.
W. J. Lewis, M. M...Tyler, Tex.
Tioga and Elmira State Line R. Rs.
4-8½ and 6 g. 54 m. 17 lo. 953 cars.
L. H. Shattuck, Supt...Blossburg, Pa.
James A. Drake, Pur. Agt...Elmira, N. Y.
Pere Bonny, M. M...Blossburg, Pa.
D. H. Stratton, M. C. B...Blossburg, Pa.
Toledo, Ann Ar. & Gr. Tr. Ry. 4-8½ g. 84 m. 9 lo. 150 c.
J. M. Ashley, Gen. Man...Ann Arbor, Mich.
H. W. Ashley, Supt. & Pur. Agt. do
C. C. Dodge, M. M...Ann Arbor, Mich.
Toledo, Cin. & St. Louis R. R. 3 g. 465 m. 63 lo. 2,200 c.
T. A. Phillips, Gen. Man...Toledo, O.
J. H. F. Wiers, Supt. Mach. & P. Agt Toledo, O.
Toledo Div.: W. N. Moffatt, Supt.; and
J. G. Clifford, M. M...Delphos, O.
C. H. Mead, Gen. M. C. B...Delphos, O.
S.-E'n & Dayton Div.: D. C. Bacon, Supt. Dayton, O.
J. T. Wright, M. M...Dayton, O.
Tonawanda Valley R. R. 3 g. 19 m. 1 lo. 13 cars.
J. V. D. Loomis, Supt...Attica, N. Y.
Toronto, Grey & Bruce Ry. 4-8½ g. 191 m 20 lo 446 c.
Edmund Wragge, Gen. Man...Toronto, Can.
W. Watson, Pur. Agt...Toronto, Can.
David Preston, M. M...Toronto, Can.
Troy & Boston R. R. 4-8½ g. 48 m. 20 lo. 484 cars.
D. Robinson, Pres. & Pur. Agt...Troy, N. Y.
Joseph Crandell, Supt...Troy, N. Y.
Z. B. Davis, M. M...Troy, N. Y.
R. V. Coon, M. C. B...Troy, N. Y.
Tuckerton R. R. 4-8½ g. 31 m. 2 lo. 28 cars.
J. J. Pharo, Supt...Tuckerton, N. J.

U

Ulster & Delaware R. R. 4-8½ g. 74 m. 7 lo. 142 cars.
Jas. H. Jones, Supt...Rondout, N. Y.
Geo. W. Wright, M. M...Rondout, N. Y.
John H. Decker, M. C. B...Rondout, N. Y.
Union Pacific Ry. (4 Gen. Divs.)
3 & 4-8½ g. 4,270 m 318 lo. 6,157 cars.
S. H. H. Clark, Gen. Man...Omaha, Neb.
Thos. L. Kimball, Asst. Gen Man. Omaha, Neb.
A. D. Clarke, Pur. Agt...Omaha, Neb.
(1) Union Div.: Gen Supt...Omaha, Neb.
I. H. Congdon, Gen. M. M...Omaha, Neb.
Geo. E. Stevens, Supt. Car Dept. Omaha, Neb.
East. Divs.: C. B. Havens, Supt...Omaha, Neb.
Robt. McConnell, M. M...Omaha, Neb.
A. M. Collett, M. C. B...Omaha, Neb.
Jas. H. McConnell, M. M...No. Platte, Neb.
A. Reis, For. Car. Sh...No. Platte, Neb.
Mtn. Div.: Edw. Dickinson, Supt. Cheyenne, Wy. T.
T. A. Davies, M. M...Cheyenne, Wy. T.
J. E. Davies, For. Car. Sh..Cheyenne, Wy. T.
Lar. Div.: E. Dickinson, Supt...Laramie, Wy. T.
R. Galbraith, M. M...Laramie, Wy. T.
R. M. Galbraith, M. M...Rawlins, Wy. T.
Frank Blake, For. Car. Sh...Rawlins, Wy. T.
West. Div.: C. C. Quinn, M. M. Evanston, Wy. T.
R. V. Brinkley, For. Car. Sh. Evanston, Wy. T.
Idaho Div.: W. B. Doddridge, Supt...Ogden, U.
U. Nor. Div.:
R. Blickensderfer, Supt...Pocatello, Id.
R. Craft, M. M...Logan, U.
F. Reardon, M. M...Eagle Rock, Idaho.
F. M. Shoemaker, For. Car. Sh. Eagle R'k, Ida.
Col. Div.: A. A. Egbert, Supt...Denver, Col.
Fred. Metzheimer, M. M...Golden Col.
E. G. Thomas, For. Car. Sh...Golden, Col.
St. J. & W'n. Rd.: L. D. Tuthill, Supt. St. Joseph, Mo.
E. Sleppy, M. M...Grand Island, Neb.
E. Hansen, For. Car. Sh...Elwood, Kan.
(2) Kansas Div.: S. T. Smith, G. Supt. Kansas C'y, Mo.
Jno. Mackenzie, Supt Mach. Armstrong, Kan.
T. B. Roberts, M. C. B...Armstrong, Kan.
K. Val. Div.: J. O. Brinkerhoff, Supt. Kan. C'y, Mo.
Jas. Mackenzie, M. M...Armstrong, Kan.
Smoky Hill & Denver Divs.:
O. H. Dorrance, Supt...Wallace, Kan.
J. B. Dailey, M. M. (S. H. Div.)...Ellis, Kan.
Chey. Div.: A. A. Egbert, Supt...Denver, Col.
R. McDougall, M. M. (D. & C. Divs.) Denver, Col.
W. Ogle, For. Car. Sh. (D. & C. Divs.) do.
Kan. Cen. Div.: 3 g. 150 miles.
W. J. Kelley, Supt...Leavenworth, Kan.
And. Goldthwaite, M. M..Leavenworth, Kan.
J. P. Newman, M. C. B. Leavenworth, Kan.
(3) Denver & South Park Div. 3 ft. gauge 227 miles.
C. W. Fisher, Gen Supt...Denver, Col.
J. H. Kirk, M. M...Denver, Col.
(4) Nevada Central Ry. 3 g. 93 m. 5 lo. 82 cars.
F. W. Dunn, Supt...Battle Mountain, Nev.
Z. T. Spriggs, M. M...Battle Mountain, Nev.
United States Rolling Stock Co. 23 lo. 4,834 cars.
A. Hegewisch, Pres...New York, N. Y.
C. F. Jauriet, Gen. M. M...Chicago, Ill
W. H. Chaddock, Pur. Agt...Chicago, Ill
Utah Central Ry. 4-8½ g. 280 m
John Sharp, Gen. Supt...Salt Lake City, Utah
S. H. Hill, Pur. Agt...Salt Lake City, Utah
W. B. Armstrong, M. M..Salt Lake City, Utah
Peter Reid, M. C. B...Salt Lake City, Utah
Utah & Nevada Ry. 3 g. 37 m
W. W. Ritter, Gen. Man...Salt Lake City, Utah
Robert Anderson, M. M...Salt Lake City, Utah
Utah & Pleasant Valley Ry. 60 m
G. M. Young, Man...Salt Lake City, Utah
Utica, Ithaca & Elmira Ry. 4-8½ g. 127 m. 11 lo. 152 c
G. Jas. Rice, Pres & Supt. Horse Heads, N. Y.
J. L. Greatsinger, Pur. Agt...Breesport, N. Y.
Geo. W. Cleveland, M. M...Breesport, N. Y.
Wm. Ells, M. C. B...Breesport, N. Y.
Utica, & Black Riv. R. R. 4-8½ g. 180 m. 22 lo. 329 c
J. F. Maynard, Gen. Supt. & P. A..Utica, N. Y.
John Bailey, M. M...Utica, N. Y.
David James, M. C. B...Utica, N. Y.

V

Vaca Vall. & Clear Lake R. R. 4-8½ g. 30 m. 2 lo. 19 c.
G. B. Stevenson, Gen. Supt...Vacaville, Cal.
Valley Ry. 4-8¾ g. 59 m. 10 lo. 317 cars.
J. E. Turk, Supt & P. Agt...Cleveland, O.
Chas. Blanchard, M. C. B...Cleveland, O.
Vernon, Greensburg & Rushville R. R. 25 m.
Horace Scott, V.-Pres...Greensburg, Ind.
Virginia Midland Ry. (See Rich. & Dan.)

Virginia & Truckee R. R. 4-8½ g. 54 m. 17 lo. 375 c.
Carson & Colorado R. R. 3 g. 150 m. 4 lo. 76 c.
H. M. Yerington, Gen. Supt...Carson, Nev.
R. J. Laws, Supt. (C. & Co.)...Carson, Nev.
C. P. Mason, Pur. Agt...Carson, Nev.
I. N. Fording, M. M...Carson, Nev.
B. F. Lyon, M. C. B...Carson, Nev.

W

Wabash, Chester & W'n R. R. 4-8½ g. 42 m. 2 lo. 32 c
J. L. Hinckley, Gen. Supt...Chester, Ill
Wabash, St. Louis & Pacific Ry. (3 Gen. Divs.)
4-8½ g. 3,241 m. 559 lo. 17,230 cars
John C. Gault, Gen. Traffic Man. St. Louis, Mo.
Robert Andrews, Gen. Supt...St. Louis, Mo.
W. S. Lincoln, Pur Agt...St. Louis, Mo.
Jacob Johann, Gen. M. M...Springfield, Ill.
U. H. Kohler, Gen. M. C. B...Toledo, O.
(1) Eas'n Div.: J. B. Barnes, M. M. Fort Wayne, Ind.
U. H. Kohler, Gen. M. C. B...Toledo, O.
G. W. Stevens, Supt...Fort Wayne, Ind.
Ohio & Ind. Div.:
Peru Div.: E. C. Murphy, Supt...Peru, Ind.
John McKenna, M. M...Peru, Ind.
Cairo Div.: D. G. Moore, Supt...Cairo, Ill
A. Van Tuyl, M. M...Carmi, Ill
(2) Middle Div.: J. Johann, Gen. M. M. Springfield, Ill.
R. M. Hemphill, M. C. B...Peoria, Ill
Ill. Div.: H. F. Clark, Supt...Springfield, Ill.
B. B. Rose, M. C. B...Decatur, Ill.
Chicago Div.: A. A. Hobart, Supt...Chicago, Ill
Peoria Div.: F. L. Tomkins, Supt...Peoria, Ill
M. M...Peoria, Ill
Rant'l Div.: B. F. Mathias, Supt...Rantoul, Ill
J. McCarthy, M. M...Rantoul, Ill.
(3) Western Div.: W. H. Selby, M. M...Moberly, Mo.
C. S. Buck, M. C. B...Moberly, Mo
Missouri Div.: R. S. Miner, Supt...Moberly, Mo.
C. B & O. Div.: J. W. Blanchard, Supt.; and
J. S. Hazen, M. C. B...Stanberry, Mo
Quincy Div.: F. D. Schermerhorn, S..Quincy, Ill.
Iowa Div.: E. N. Armstrong, Supt...Keokuk, Ia
D. Moin. Div.: H. B. Skeele, Supt..Des Moines, Ia
Walla Walla & Columbia Riv. R. R. (See Ore. Ry.
Walkill Ry. 4-8½ g. 117 m. 9 lo. 169 cars
G. H. Graves, Supt...Rondout, N. Y.
J. B. Dykeman, M. M...Rondout, N. Y.
John H. Decker, M. C. B...Rondout, N. Y.
Warwick Valley R. R. 4-8½ g. 28 m. 2 lo. 18 cars.
Grinnell Burt, Pres. & Pur. Agt. Warwick, N. Y.
S. Mills, M. M...Warwick, N. Y.
Washington & Western R. R 4-8½ g. 52 m. 5 lo. 83 c.
H. McLean, Gen. Supt...Alexandria, Va.
Edward Dunn, M. M...Alexandria, Va.
John Harrison, M. C. B...Alexandria, Va.
Waynesburg & Washington Rd. 3 g. 28 m. 3 lo. 15 c.
J. G. Ritchie, Supt...Waynesburg, Pa.
G. E. Huggins, M. C. B...Waynesburg, Pa.
Welland Ry. 4-8½ g. 25 m. 3 lo. 147 cars
William Pay, Supt...St. Catharines, Ont
Jas. Taylor, M. M...St. Catharines, Ont
Wm. H. Pay, M. C. B...St. Catharines, Ont
West End Narrow Gauge Ry. 3 g. 16 m
Rolla Wells, Supt...St. Louis, Mo
M. M. Hodgman, M. M...Florissant, Mo.
West Feliciana R. R. 4-8½ g. 27 m. 2 lo. 22 cars
J. B. McGehee, Pr. & Gen. Supt. Bayou Sara, La.
J. A. Tilton, M. M. & C. B...Bayou Sara, La.
West Virginia, Central & Pittsb'g Ry. 13 m 3 lo. 19 c.
W. E. Porter, Gen. Supt...Piedmont, W. Va
W. T. Blackiston, Pur. Agt...Piedmont, W. Va.
E. W. Lippencott, M. M. & M. C. B..Piedmont.
Western R. R. (of Ala.) 5 g. 88 m. 15 lo. 270 cars.
Atlanta & W. Point Rd. 5 g. 87 m. 14 lo. 20 c.
Cecil Gabbett, Gen. Man. & Supt...Mont., Ala.
Robert King, M. M...Montgomery, Ala.
F. M. Wade, M. C. B...Montgomery, Ala.
Western Counties' Ry. 4-8½ g. 67 m. 8 lo. 137 cars.
J. Brignell, Supt...Yarmouth, N. S.
Western Maryland R. R. 4-8½ g. 157 m. 16 lo. 394 c.
J. M. Hood, Pr. & Gen. Man...Baltimore, Md.
R. J. Adair, Pur. Agt...Baltimore, Md.
David Holtz, Mast. of Mach. Union Bridge, Md.
J. H. Nussear, M. C. B...Union Bridge, Md.
Western No. Carolina R. R. 4-8½ g. 155 m. 6 lo. 36 c.
V. E. McBee, Supt...Salisbury, N. C.
Geo. P. Erwin, Pur. Agt...Salisbury, N. C.
G. W. Gates, M. M...Salisbury, N. C.
Western & Atlantic R. R. 5 g. 138 m. 48 lo. 952 c.
R. A. Anderson, Gen. Supt...Atlanta, Ga.
W. R. Webster, Pur. Agt...Atlanta, Ga.
John H. Flynn, M. M...Atlanta, Ga.
Jno. H. Flynn, M. C. B & M. C. B..Atlanta, Ga.
Wheeling & Lake Erie R. R. 143 miles.
C. R. Griggs, Gen. Man. & Supt...Toledo, O.
M. D. Woodford, Gen. Supt...Toledo, O.
L. James, Supt. Mach. & Car Dept. do.
White Water R. R. (See Ft. W., Cin. & Lou.).
Wilmington & No'n R. R. 4-8¾ g. 77 m. 13 lo. 148 c.
J. H. Thompson, Supt. & P. A..Coatesville, Pa.
George Rommel, M. M...Coatesville, Pa.
Alex. Maitland, M. C. B...Coatesville, Pa.
Wilmington & Weldon; Northeastern; S. C. Central;
Cheraw & Darlington; Cheraw & Salisbury; and
Wilmington, Columbia & Augusta R. Rs.
5 g. 599 miles 70 locomotives 1,120 cars.
R. R. Bridgers, Gen. Man...Wilmington, N. C.
J. F. Divine, Gen. Supt...Wilmington, N. C.
John Bisset, M. M...Wilmington, N. C.
W. H. Day, M. C. B...Florence, S. C.
C. R. Clowe, M. C. B. (W. & W.) Wilmington, N. C.
Windsor & Annapolis Ry. 4-8½ g. 130 m. 10 lo. 156 c.
P. Innes, Gen. Man...Kentville, N. S.
Wm. Yould, M. M...Kentville, N. S.
Wm. Grierson, M. C. B...Kentville, N. S.
Wisconsin Central R. R. 4-8½ g. 480 m. 31 lo. 783 c.
F. N. Finney, Gen. Man...Milwaukee, Wis.
J. W. Curtis, Pur. Agt...Milwaukee, Wis.
J. B. Henney, Supt. M. P. & M..Stevens Pt., Wis.
Mil. & E'n Divs.: A. A. Allen, S. Milwaukee, Wis.
W. & No. Div.: G. Campbell, S. Stevens Point, Wis
Worcester & Nashua; and Nashua & Rochester R. Rs.
4-8½ g. 95 m. 20 lo. 505 cars.
C. S. Turner, Pres. & G. Man. Worcester, Mass.
G. W. Hurlburt, Supt...Worcester, Mass.
John G. Brady, M. M. & C. B. Worcester, Mass.
Worcester & Shrewsbury R. R. 3 g. 3 miles.
Worcester & Somerset R. R. 4-8½ g. 10 m. 1 lo. 4 c.
J. J. Coburn, Supt...Worcester, Mass.
G. E. Hapgood, Pur. Agt...Worcester, Mass.
Chas. Cleveland, M. M...Worcester, Mass.

Y

Youghiogheny R. R. 4-9 gauge
Wm. Wilson, Supt...Irwin's, Pa